1981

Ambulatory pediatric services in a rural province of northern Thailand : a study of the theory-implementation gap

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AMBULATORY PEDIATRIC SERVICES IN A RURAL PROVINCE OF NORTHERN THAILAND: A STUDY OF THE THEORY-IMPLEMENTATION GAP

"A Thesis
Submitted to the Yale University School of Medicine
in Partial Fulfillment of the Requirement
for the degree of Doctor of Medicine"

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March 2, 1981

To John - a friend, companion, and colleague.

ACKNOWLEDGEMENTS

I would like to thank the following individuals for making this thesis possible and pleasurable: Drs. Patrick Ongley and Norman Talner who gave me the initial encouragement and continued support and advice; Noy Promutkao, my interpreter; John Rogosch and Ron Wilson, for their assistance in providing me with the documents and information from the Lampang Project; Dr. Sommai Yasamut of the Lampang Provincial Hospital Community Health Department; the trustees of the China Medical Board of New York and the members of the Yale University Travel Fellowship Committee, for their financial assistance; and the many health workers, administrators, and villagers of the Lampang Province. To Dr. Pien Chiowanich, my adviser in Thailand, I add a special note of thanks and affection for his valuable assistance and friendship.

I would also like to express my affection and appreciation to Dr. Avudh Srisukri and his family, and Dr. Suchint Wongchoosee and her family for extending such warm hospitality to me while in Thailand. I thank Karen Otis for her assistance in the preparation of this manuscript.

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I. Preface

More than three-quarters of the total population of the world or almost three thousand million people are presently inhabiting the small towns, villages, and isolated households of the rural areas. They live almost entirely in the Asian, African, and South American countries included in the geographic tropics, and the bulk of them are poor and illiterate. They live under conditions of poor hygiene and nutrition, and they suffer from short life expectancy. The tacitly accepted norms for these people are those of ill-health, and many suffer from diseases that have long ceased to be determinants of significant morbidity and mortality in the Western world. Thus, the people of developing countries, and especially the women and children are confronted with the devastating problems of socio-economic deprivation, rapid population growth, widespread disease and malnutrition, as well as political instability and, all too often, a reliance upon Western countries for solutions to their own problems.

While these problems have been well recognized, the development of public health and medical care often suffers from a lack of rational planning and effective implementation. It is clear that if health care is to reach those most in need, strategies must be based on priorities dictated by the population as well as an understanding of the limitations imposed by inadequate resources, poor health care infrastructures, and an impoverished and uneducated populace.

This is presently the situation in Thailand, a developing country in southeast Asia. This nation has a population of 45 million; 85% live in rural areas and 42% are under the age of 15. The maldistribution of health resources is a major problem, and in some out-lying areas, the ratio of physician to population is as low as 1:200,000.

For the past two decades in particular, the Royal Thai Government has expressed the desire to improve the social, economic, and health situation of the Thai people, especially those living in rural areas who are generally in a much worse condition than urban dwellers. Many plans and programs have been created to provide acceptable, high quality health care. The current focus of this nationwide health programming is the fourth of Thailand's Five-Year Plans for Economic and Social Development for the years 1976-1981.

A large number of individuals and institutions determine government health planning efforts, and the result is an overwhelming amount of theory concerning needs, priorities, programs designed to affect health status, and expected levels of impact. It is generally anticipated that there will be some discrepancy between this and what is actually implemented. The purpose of this study is to examine this theory-implementation gap using ambulatory child health services in a rural district of northern Thailand as the focus of investigation.

The overall research design of this thesis is to review first the history and current aims of the Thai Government's planning efforts in child health care. The second part of the study consists

of actual field work done in the Hang Chat district of Lampang Province in Thailand in order to examine the realities of the situation, in direct contrast to the planning strategies of the health care system. Observation and interview techniques were used to gather information on the implementation of child health care and to explore how the goals of the system promote certain services and standards of quality while failing to provide others.

II. PROFILE OF THAILAND

GEOGRAPHY

Thailand is an independent constitutional monarchy, occupying approximately 200 000 square miles in central Southeast Asia, bordered by Cambodia in the southeast, Laos in the east and northeast, Burma in the west and northwest, and Malaysia in the south.

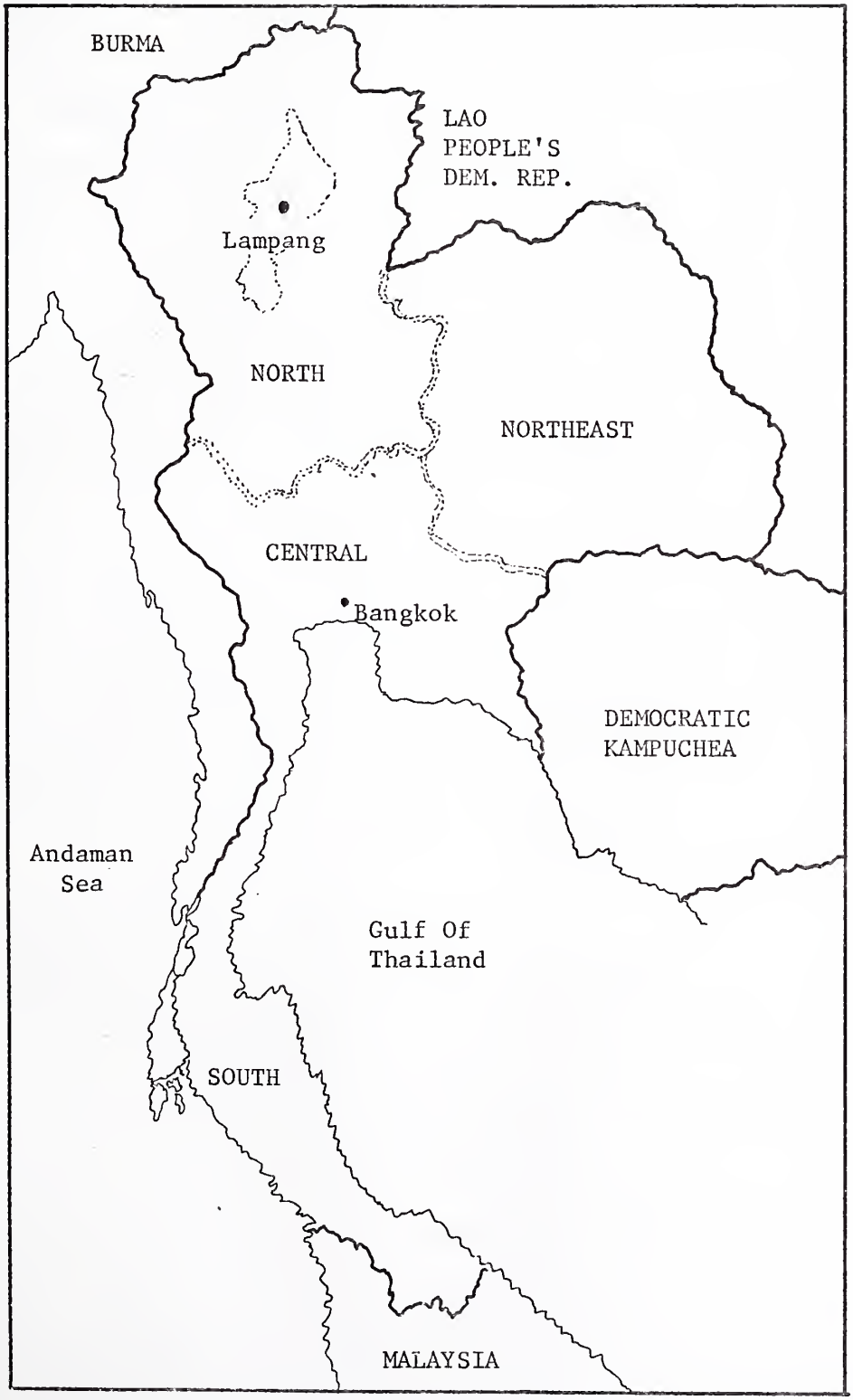
The country is comprised of four main geographic regions: the central lowland plateau, the northern mountains, the northeastern plateau, and the southern peninsula. The tropical climate is composed of three major seasons: March to May is hot, June to November is rainy, and December to February is dry and cool. The northeast tends to be dry, while in the south, it rains throughout the year (1,2). (Figure 1)

POPULATION

In 1980, the population was estimated at 46 million, with an annual growth rate of 2.2% (3). Significant ethnic minorities include approximately six million Chinese, one million Malays and Vietnamese, and 200,000 Cambodian refugees (4,5). In addition, 3-500,000 hilltribe people are situated in rural Northern Thailand. Many of these individuals are of Laotian and Burmese descent and identify with neither the Thai language nor its culture. Until recently, the Thai government had very limited information about these rural hilltribes and was therefore unable to provide adequate

Figure 1

THAILAND



educational, social, and health care services (6).

Over 90% of the Thai people are Buddhist; the remainder is split among Muslims, Hindi, and Christians (1). The Buddhist system of temples and monks is highly developed, with over 25,000 temples, 213,000 monks, and 114,000 novices. In the past, temples served as hospitals, schools, and centers of community and cultural activity. Through the process of modernization, monks, though highly respected, are increasingly left to perform only those duties related to religious ceremony (1). This is perhaps not so much the case in rural areas, where temples are still community centers.

The structure of the population is typical of a developing country: approximately 45% of the population is under the age of 15, resulting in a very high dependent-to-adults ratio, and only 3% of the population is over the age of 65 (3). In addition, there is an extremely high rural to urban ratio, with 85% living in rural areas, primarily poor farmers.

In 1980, the national literary rate was 89% for males and 75% for females. Of the numbers enrolled in the school systems throughout the country, 60% of the 4-24 year age group was represented, whereas only 3-4% of the 19-24 year age group had access to university education. Rural/urban differences are again evident; only 75% of the rural children complete the five-year compulsory primary level education. In addition, the drop-out rate after primary school is very high with only 3% continuing on to the secondary level (7).

The population is distributed throughout 72 provinces, 697 ampurs (districts) 5,795 tambons (subdistricts) and 51,635 mubans (villages) (2). The typical populations in each of these units are: 500,000; 70,000; 8,000; and 600-1000 respectively (7).

ECONOMICS

In general, Thailand has had an excellent economic record following the post-war period. In 1977, the Gross National Product (GNP) of Thailand was US$18,085. million, making it one of the wealthier nations in Southeast Asia, after Hong Kong, Singapore, and Malaysia (4,9). The gross domestic product increased at an annual rate of 7.8% between 1960 and 1973; with population increasing at a rate of 3.2% a year, the rate of growth of per capita incomes was 4.5%. The result has been the formation of an open economy, with few import restrictions, and modest tariffs under a free enterprise system with only limited government intervention (10).

The main contribution to GNP is agriculture; with 30% of the total land area currently under cultivation, and with rice, tapioca, and maize the most valuable export products, it is the cornerstone of the Thai economy. Recently, there has been a growth in the production of jute and sugar cane, and less typically, Thai agricultural products such as mung beans, soybeans, groundnuts, tobacco leaf, and pineapples. This has been viewed by some as a reflection of a willingness to diversify into areas with favorable export markets (4). Among the non- agricultural but essential export products are rubber, tin, and teak (1).

In 1979, the total work force was estimated at 18 million. Of this figure, 74.9% was engaged in agriculture and fishing activities, further emphasizing the vital role of agriculture in the Thai economy. However vital this group is, though, it suffers primarily from what is referred to as the "rural poverty" of the subsistance farmer, a situation in many respects the result of extensive middlemen sectors and wide swings in international prices for agricultural products. To make matters worse, successive governments in Bangkok have continued to balk at price guarantees, the creation of buffer stocks, and subsidies for machinery necessary to insure adequate yields for farmers (4).

The remainder of the work force consists of 14.8% in commerce and services, 6.4% in manufacturing, 4.2% in government and public services, and 1.3% in construction. The small labor force, in general, is non-unionized, and up to the present, both workers and authorities have seemed reluctant to adopt positions that might culminate in direct confrontation.

The mean per capita income in 1976 was 7,541 baht (US=$375).[1] This figure, however, has very little meaning considering the vastly uneven distribution of income between both social classes and geographic areas. For example, the monthly income of a farmer in the Northeast is seven times less than that of the average Bangkok citizen, and it is estimated that as much as 90% of the wealth of the country is controlled by as little as 10% of the population (11, 12).

Thus, in spite of the general view that Thailand has shown considerable economic development, analysis of emerging and long-term trends indicates that Thailand may be faced with increasing difficulties in future development. Major problems are related to the near exhaustion of those economic growth opportunities that have contributed to development in the past. A second area of concern involves the issue of participation of different segments of the population in development and the extent to which certain groups are likely to benefit from this process in the future (2).

POLITICS AND ADMINISTRATION

Though in an area of much geographical and ideological conflict, Thailand has maintained conspicuous commitments to capitalism, monarchy, and Western geopolitical interests, placing it in a vulnerable international position (3). In 1932 Thailand's absolute monarchy officially became a constitutional monarchy, but parliaments are short-lived or of limited effectiveness. Domestically, with the exception of increased activity in areas of the South and Northeast, the political situation is comparatively stable despite the fact that forcible, though usually non-violent changes in national leadership frequently bring military figures to power. This has not affected the traditionally centralized administrative structure, but has prevented the establishment at the community level of democratic action and change through popular initiative.

Modern bureaucratic systems and practices reflect the strongly rooted cultural values and customs of society. Relationships between civil servants are highly personalized rather than institutionalized, and loyalty within the hierarchical structure tends to be more valued than efficiency and productivity (2). One result is a deeply-rooted bureaucracy characterized by considerable inertia, low morale, poor internal coordination, and devastating wastefulness (1).

Executive powers are held primarily by the offices of the Prime Minister, various other Ministries, and the Bureau of the State Universities, with most of the authority for planning, budgeting, and personnel administration resting with the National Socio-Economic Development Board, the Budget Bureau, and the Civil Service Commission. Provincial governors and district chiefs appointed from Bangkok by the Ministry of the Interior administer the affairs of their jurisdictions while bearing the responsibility for overseeing and coordinating the actions of tambon and village headmen, the elected officials at these local levels.

ENVIRONMENTAL SANITATION

The problems of environmental sanitation, such as water supply and excreta disposal, are addressed by several governmental agencies: the Ministry of Public Health, the Provincial Water Works Authority, the Department of Mineral Resources, the Office of Accelerated Public Development, and the Department of Public Works. Several donor agencies are involved as well. On a more local level,

these issues have been the responsibility of the sanitarians working in the provincial and district levels of the rural health system. In spite of what seems like a comprehensive task force, most efforts have on focused well-water sources for urban and small community areas, rather than on general water availability and sanitary waste disposal in all communities (3).

An analysis of current environmental sanitation levels highlights this emphasis. According to a survey conducted in 1975 by the World Health Organization (Table 1), 80% of the population was without safe drinking water supplies, and 62% was without a adequate sanitary excreta disposal. Further breakdown of these figures reveals the marked discrepancies between geographic areas, especially noticeable in comparing Bangkok with rural areas, or in comparing rural communities of various sizes (13).

Table 1

Drinking Water Supplies and Sanitary Excreta Disposal in Thailand, 1975 (13)

Subsector	Total Population of Subsector (in millions)	Without Safe Drinking Water		Without Sanitary Excreta Disposal	
		Population (in millions)	Percentage	Population (in millions)	Percentage
Small Rural Community (<500 population)	24.64	21.93	89%	22.39	75.6%
Large Rural Community (500-2,000)	4.97	3.38	68%		
Small Sanitary District (2,000-5,000)	1.2	.97	81%	1.70	39.6%
Large Sanitary District (5,000-10,000)	3.1	2.88	93%		
Municipalities (>10,000)	2.61	1.41	54%	.33	12.6%
Bangkok Metropolis	3.31	1.49	45%	.25	7.5%
TOTAL	40.07	32.06	80%	24.67%	61.6%

III. GENERAL HEALTH DATA

With respect to general health status, Thailand is presently in a situation similar to many other Asian nations. As a result of immunization activities, vector control programs, and sanitation improvement, most of the severe epidemic diseases are under control, and those causing significant morbidity and mortality are preventable. While mortality is fairly low, infant and child mortality rates remain high. Malnutrition is important, not as a primary cause of death, but as a contributing factor in deaths from other causes. Customs, poverty, and lack of education are at the root of many health problems which are worsened by the high rate of population growth.

Progress has been and is continuing to be made, although many factors are working to maintain the status quo of poor health and social welfare in terms of life expectancy, infant survival, and frequency and severity of illness. The current network of health services is inadequate given the task of improving general health to acceptable levels. Major faults inherent in the health care system include inadequate resources, maldistribution and vast underutilization of the few resources that are available, administrative inefficiency, physician shortage and maldistribution, and poor use of all levels of health personnel (14).

These inadequacies primarily affect the rural population since the distribution of resources generally favors urban areas (14). For example, the physician/ population ratio of Thailand is 1:7,600, but in out-lying rural areas it is as much as 1:200,000 (15). In

addition, the limited resources are often inaccessible to rural populations, and economic and acceptability barriers further limit the effectiveness of the rural medical system.

MORBIDITY AND MORTALITY PATTERNS IN THAILAND

In 1937, life expectancy at birth was estimated at 35 years, and following World War II, it increased rapidly to the present time; it is currently 61 years for both males and females (3).[2] In 1974, a study was undertaken by the East-West Population Institute in Thailand to determine the extent of geographic differences in life expectancy. The results showed dramatic discrepancies in health status between rural and urban dwellers as reflected in this statistic. In the Bangkok area, for example, expectancy was 74.8; in municipalities 71.1; in provincial urban areas 68.8, as compared to 60.1 for all non-municipal areas; 59.1 in the rural Northeast; and 56.9 in the rural Northern areas. (3).

In 1980, a survey completed by the Office of Health, Population, and Nutrition in the Ministry of Public Health (MOPH) in Bangkok demonstrated a crude birth rate of 2.2%. This birth rate is greater than that of most Asian nations, including China (1.2%), Korea (1.7%), India (1.9%), Singapore (1.1%), Hong Kong (1.2%), and Indonesia (2.0%) and is only less than that of Burma (2.4%), the Philippines (2.4%), and Malaysia (2.5%) (3).

Specific determinants of fertility have been studied to assess the relative contributions each has made over the past decade, in order to identify areas where intervention and the use of health

resources will have maximum benefits. Direct determinants are as follows: age structure, which has remained relatively stable during recent increases in completed family size (4.85 in 1975, currently 3.98); age at marriage, which has also remained stable; the practice of breastfeeding, declining steadily; induced abortions, the incidence of which, although illegal in all but the most extreme circumstances, is increasing dramatically; and the use of contraceptives. Over the past decade the percentage of eligible couples practicing contraception has increased from about 15% to 53.4% (3).

The effects of indirect determinants, such as the education of women on the need for and availability of contraception, socioeconomic levels, and female employment trends are difficult to assess because of the difficulties in studying them independently. However, these are areas where far greater emphasis could be placed by government policy makers as well as those attempting to implement policy at the local level (3).

Perhaps the two most important parameters of child health status and survival conditions are the infant and child mortality rates (IMR and CMR). Health statistics published by the Thai government have demonstrated a dramatic decline in IMR, from 104/1,000 live births in the 1940's to 25.5/1,000 in 1970, thought to be the chief result of the reduction in mortality from infectious diseases (17). However, it is generally felt that these figures are highly unreliable because of underreporting, in spite of compulsory birth and death registration. In contrast, a US Agency for

International Development (AID) survey in conjunction with the Thai office of Health, Population, and Nutrition has estimated that the 1980 IMR may be as high as 60-70/1,000 births, a figure that is considerably higher than the figure of the Thai government and other Asian countries, most notably Singapore (21/1,000) and Hong Kong (19/1,000).[3] The East-West Population Institute has also demonstrated significant geographic differences in the IMR. Table 2 shows the discrepancies between rural and urban areas, and different rural areas (18).

The official government estimates of the CMR is 7.3/1,000 children under one year of age, also quite low compared to those of non-governmental agencies (3,18), which estimate a figure of 34.9, almost five times greater than the official government figure.(Table 3) Once again, the urban-rural variations follow the pattern mentioned above. Of note, is the fact that although age-specific death rates have decreased remarkably in the age groups under 70 during the past 20-30 years, the smallest drop occurred in the 1-4 age group (15). During this same period the IMR decreased faster than the CMR. In 1965, 34% of all deaths in Thailand occurred in children younger than five years, and at that time they constituted only 16% of the population (19). This is in direct contrast to the United States, where the same age group was 10.8% of the population in 1968, but accounted for only 6.4% of all reported deaths (20).

In spite of recent technological advances, the Thai people, especially those in rural areas, suffer from widespread and for the most part preventable diseases--acute infectious and communicable

Table 2

Infant Mortality Rates in Thailand, by Geographic Location (18)

(1974-1975) per 1,000 live births

Thailand	56.3 (70.7 male, 46.1 female)
Bangkok	31.0
Provincial urban	10.3
Non-municipal	63.9
Central region (not including Bangkok)	49.5
North	96.0
Northeast	54.4
South	60.4

Table 3

Child Mortality Rates in Thailand, by Geographic Location (18)

(1974-1975) Age 0-4 years, per 1,000 live births

Thailand	34.9	
Municipal	13.3	
Bangkok	3.4	
Provinical urban	12.8	
Non-municipal	37.8	
Central	13.9	(without Bangkok, 16.7)
North	49.2	
Northeast	41.4	
South	33.9	

diseases complicated by poor nutrition and closely related to unsanitary environment, poverty, cultural patterns and behavior. For example, in 1980, the ten leading causes of deaths in decreasing order of frequency were accidents (including poisonings and violence), heart disease, respiratory tuberculosis, malignant neoplasms, pneumonia, diarrheal disease, malaria, diseases of the stomach and duodenum, diseases of pregnancy, childbirth and puerperium, and avitaminosis and nutritional (especially Vitamin A) deficiencies. The number of deaths secondary to accidents, poisonings, and violence was twice that of the second leading cause, heart disease, and all ten causes constituted 24% of the total numbers of deaths reported, thought to be about 50% of the estimated numbers of actual deaths (21).

In more than half of the diseases listed above, there is a direct relation to or exacerbation by inadequate water supplies and poor sanitation in combination with malnutrition (21). Although data from the Division of Health Statistics have indicated striking increases in deaths from accidents, poisonings, and violence, chronic pulmonary disease, and atherosclerotic heart disease, major communicable diseases, especially acute illnesses of the respiratory and gastrointestinal tract, continue to contribute significantly to morbidity and mortality (17).

In response to statistics citing major causes of deaths, the MOPH in 1976 designated three major health problem areas (22)(Appendix [1]):

1. Water and vector borne diseases

2. Respiratory system infection

3. Family health

(example: Immunizable communicable diseases

Maternal and neonatal health

Nutritional deficiencies

Dental diseases

Skin diseases

Eye diseases

Of the water and food borne diseases, diarrhea, dysentery, typhoid, and hepatitis are prevalent. The vector-borne diseases, especially dengue hemorrhagic fever, and malaria are prominent in the pediatric population. Respiratory, skin, and parasitic diseases are also widespread with low mortality, but significant morbidity. One study in 1957 by Vajrasthira and Harinesuta reported that 62.9% of the population had some type of parasitic infestation (23). In rural areas, the rate of hookworm infection is as high as 80-90%, while in localized areas that of liver flukes approaches 100%. Vitamin A, Vitamin B, iodine, and iron deficiencies are common, as is protein-calorie malnutrition, which accounts for at least 55,000 deaths yearly among pre-school children. Rheumatic heart disease is also presently one of the most important types of cardiac problems, although atherosclerotic heart disease is increasing in importance (1).

SPECIAL PROBLEMS IN MATERNAL AND CHILD HEALTH

Unfortunately, it seems that in the less developed countries, it is maternal and child welfare that is most affected by social and economic deprivation. The result is a concentration of the above mentioned problems in both of these populations, and special care must be taken to insure that their health needs are addressed when designing strategies for health development.

Mention has already been made of the high infant and child mortality rates, and closer analysis of the major determinants of each reveals specific patterns in maternal and child mortality and morbidity.

The IMR correlates very closely with factors such as maternal nutritional status, prenatal care, delivery conditions, and the environment of the infant during the first months of life (24). It is apparent that inadequate health coverage has been a major factor in the high IMR. For example, in 1970, a Department of Health report found that of the 1.2 million births throughout the nation over the period of that year, only 15% were attended by trained health personnel. In rural communities, only 35% of pregnant women received some type of prenatal care, and 81% were never seen for routine post-partum care. In direct contrast, the majority of urban women, 76.7%, deliver in hospitals. The superior medical attention and the higher degree of access to health services in urban areas accounts in part for the lower urban IMR (14).

Maternal nutritional status is another crucial factor, with widespread levels of maternal malnutrition primarily responsible for the high incidence of deliveries of low birth-weight infants.

Although the current trend is toward smaller families, most older women in rural areas have had an average of six to seven children. With pregnancy and lactation often lasting two to three years for each pregnancy, there is a considerable nutritional drain on each woman for more than a third of her child-bearing years. Dietary supplements are rare, and instead, custom dictates general food restrictions following delivery, such as prohibition of many high-protein foods and an increase in the amount of daily rice. This custom of "roasting",[4] superimposed upon previously marginal levels of nutritional status has had a profound effect on maternal health, and has contributed to overt manifestations of vitamin deficiencies and protein-calorie malnutrition (26). These factors produce, in effect, a "maternal depletion syndrome," a condition with profound consequences for both mother and fetus (27).

The most significant determinants of child mortality are related to malnutrition and communicable diseases, as well as to socioeconomic setting, environmental sanitation, and health care coverage (3).

The actual incidence of malnutrition is extremely high. In 1980, the Nutrition Division of the MOPH estimated that 57% of pre-school children (ages 0-6) had some degree of malnutrition, either first, second, or third (3).[5] These data are further broken down according to geographic area and degree of malnutrition.(Table 4) Again, striking geographic differences are apparent. For example, in the rural Northeast area, the incidence of malnutrition is 60%, whereas in the more urban central and eastern provinces, it

Table 4

Protein—Calorie Malnutrition Among Preschool Children in Thailand

by Geographic Regions (38)

Area	Total Population of Region as % of Total National Population[a]	Degree of Malnutrition (as % of preschool children within geographic area) NL	First	Second	Third
Northeast	33%	40.04	42.17	15.47	2.31
North	17%	45.86	39.47	12.29	2.30
South	15%	47.99	37.91	12.34	1.76
Central (inc. Bangkok)	35%	54.18	35.31	9.16	1.35
East[b]	-	55.98	33.79	8.67	1.56
TOTAL	100%	42.68	40.84	14.29	2.19

[a]Source of data on regional populations—Larry Steinstein, "A Critique of Thai Population Data" in Perspectives on Thai Population, Research Paper No. 11 (Bangkok, Institute of Population Studies, Chulalongkorn University, 1974).

[b]East included in Northeast population total.

is 46% and 44%, respectively.

There are many causative factors of malnutrition, including maternal malnutrition, irregular breast feeding patterns, early introduction of non- nutritious food supplements soon after birth, improper weaning practices, food shortages, and infection. In addition, lowered food production, created by inadequate irrigation facilities, drought, and poor pest control, is further compounded by large numbers of family members to feed and general ignorance regarding the best use of local food resources (15). One dietary survey done in 1972 by Chandrapanond reported that the principal food in the diet of preschool children was rice, and that carbohydrates comprised 79-85% of the total daily calories, with protein only 7.7-8% (29). The feeding practice within rural families is also often directly related to the earning capacity of each individual; infants and preschool children are consequently given last priority (14).

Thus, although there is a general concensus among well-to-do Thais and foreigners that the nutritional status of Thai women and children as a whole is generally quite good, this is perhaps true only when Thailand is compared to countries such as those in Africa where the prevalence of severe malnutrition is well known (17). The fact remains that in 1970 alone, there were 79,000 reported cases of vitamin deficiencies in Thailand, primarily beri-beri, diagnosed and treated in health units, and 3,500 of these died during that same year. The endemic nature of this problem of poor nutrition has increased the susceptibility of the population to disease, and

during 1970, over 130,000 in-patient children were treated for diarrhea and enteritis, over 5,000 of whom died in spite of treatment (20).

Communicable diseases are undoubtedly the second major determinant of both infant and child mortality. More specifically, gastrointestinal and diarrheal diseases, parasitic infestation, dermatoses, and upper respiratory infection are exacerbated by malnutrition, as well as poor water and environmental sanitation, and inadequate shelter. Neonatal tetanus is the direct result of limited prenatal immunization practices and poor hygiene, in addition to customs such as the traditional birth attendants' use of bamboo to cut umbilical cords following delivery (3,30). Also of importance, and perhaps more frustrating to medical personnel because of the relative ease of improving the situation, is the limited immunization coverage (3). In 1979, the reported percentages of children up to one year of age immunized for the major childhood diseases were as follows: smallpox 47.7%,[6] diphtheria, pertussis and tetanus, 42.7%, and BCG, 53.8%.[7] In addition, only 15.1% of pregnant women during that year had received at least one tetanus toxoid injection. Only limited data are available for polio and measles vaccines, but given the high cost of these and the general lack of concern and subsequent intervention, because of relatively low morbidity and mortality figures, low immunization levels would be expected (3).

It is important to emphasize that neither malnutrition nor communicable disease levels can properly be discussed as isolated factors. Numerous studies have demonstrated clearly that poor nutritional status contributes significantly to lowered disease resistance to as well as increased morbidity and mortality from disease and that a specific disease itself can reduce the nutritional status to a marginal level as well as precipitate overt manifestations of vitamin deficiencies, kwashiorkor, or severe protein-calorie malnutrition (31). The results of this synergism, combined with the various other factors in infant and child mortality, produce a bleak picture for rural, low-income Thai children, in particular. The interdependence of factors must also be taken into account in the course of designing methods of intervention by health providers, since solutions aimed at isolated causes will undoubtedly be fairly ineffective (3).

Also compounding the severe problems created by high levels of malnutrition and infectious diseases is the inadequate coverage of the present rural health care system, especially in relation to screening practices. Ideally, this would identify those at highest risk for disease, and those requiring immediate or preventive care would receive it when necessary to avoid the development of life-threatening situations (13).

IV. GOVERNMENT HEALTH CARE ORGANIZATION AND RURAL HEALTH SYSTEM

At the central level the MOPH is responsible for the majority of public health services within the public sector, and it dominates the country in terms of health investment and potential. The municipalities, not including Bangkok, have very little involvement with health care and are administered through the Ministry of the Interior. Most of the sophisticated university teaching hospitals are administered through the Office of University Affairs completely separate from the MOPH (1).

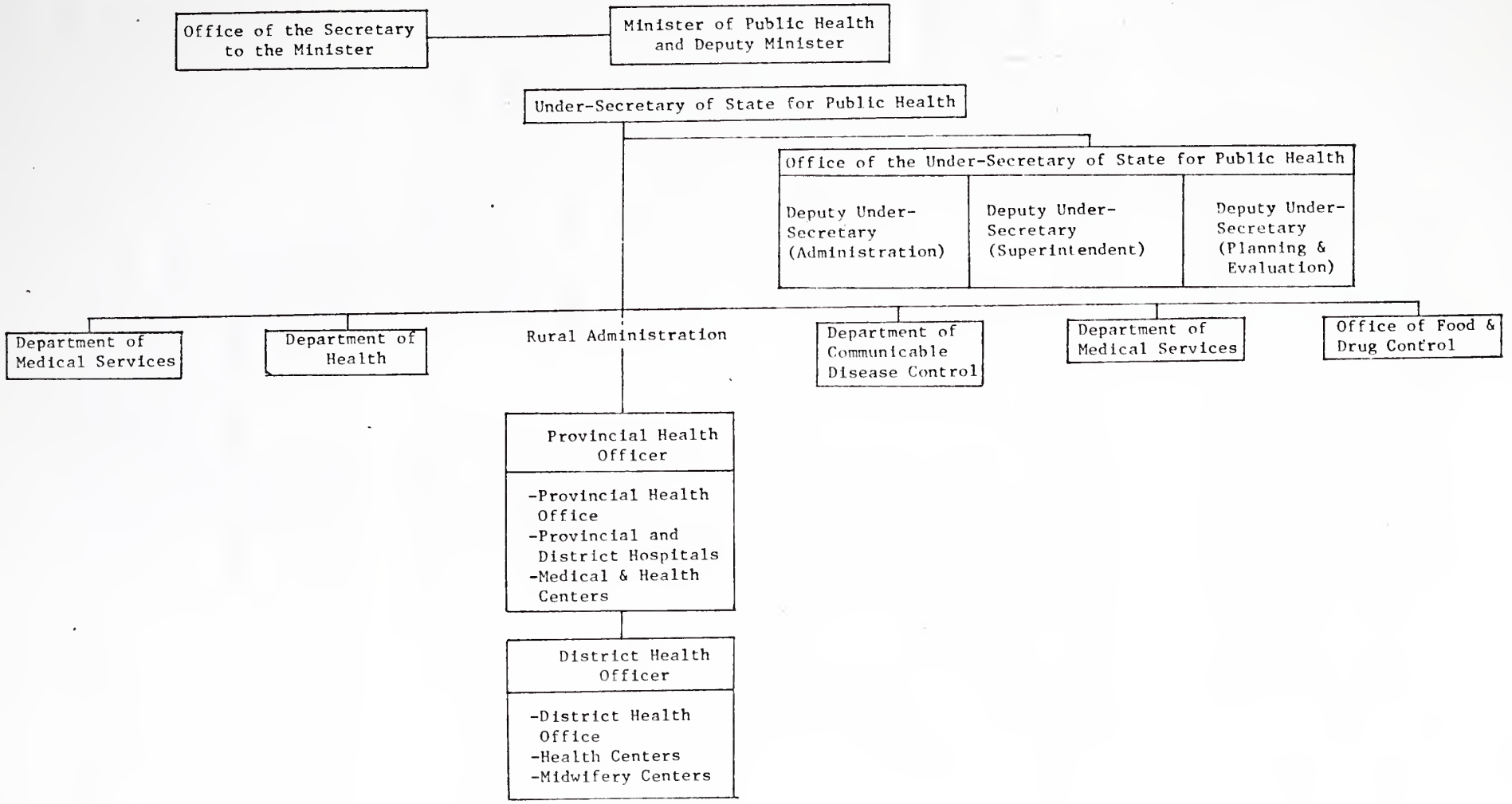
The services the MOPH provides to the Thai population include preventive, promotive, curative, ad rehabilitative medical care, and the production of a wide range of pharmaceutical products. It is also engaged in training health personnel such as nurses, health assistants, midwives, and auxiliary health workers (32).

The MOPH is comprised of six main agencies and multiple subdivisions. Most are administered centrally, some peripherally, such as the rural health system (32,33) (Figure 2)

This provincial rural health infrastructure is designed to operate on three spatially distributed levels in order to reach the local areas while providing for referrals to more specialized care facilities when necessary. At the most local level, the health sub-centers are the midwifery centers (MC) and health centers (HC). The former has a jurisdiction of two to three villages, and the latter that of a tambon (subdistrict), usually composed of ten to

Figure 2

The Existing Organization of Ministry of Health (1975 to present) (33)



fifteen villages. The MC is staffed by one midwife and offers a variety of outpatient services, preventive, promotive, and curative, with special emphasis on maternal and child health. The HC is staffed by a midwife, a sanitarian, and one or two health assistants or nurse's aides and provides full out-patient medical and sanitation services.

At the district level, which is composed of six to eight tambons, there is an intermediate facility, the ten to thirty bed district hospital (DH), known as a first class health center. DH's provide both general in-patient and out-patient services. Staffs range from ten to fifteen, sometimes with a physician as medical director, several nurses, midwives, nurse's aides, health assistants and a laboratory technician. Of note is that the physician usually has a significant private practice to supplement his government salary, which often leaves little time for official duties related to the hospital. The apex of this hierarchical system, located in the provincial capitol, is the provincial hospital (PH), a large (up to 400 beds) facility with extensive capabilities. The current distribution of the PH, DH, and health sub-centers, and the extent of coverage of these facilities is shown in Table 5 (3).

The basic administrative unit in the country is the province, and the provincial health network as described above is headed by a Provincial Health Office (PHO) directly responsible to both the provincial governor from the Ministry of the Interior and the Under-Secretary of State in the MOPH. Although the Provincial Health Officer officially administers both the provincial hospital

Table 5

Population Coverage of Rural Health Facilities

in Thailand, 1980 (2)

Geographic Level (Facility)	Number of Areas to be Covered	Number of Facilities	% of Coverage
Provincial (Provinical Hospital)	72	92	100%
District (District Hospital)	697	288	41.3%
Sub-district (Health Center)	5,795	4,167	71.9%
Village (Midwifery Center)	51,635	1,674	3.2%

and the rural health center network, there has traditionally been a separation between the provincial hospital and the provincial health office (33). (Figure 3)

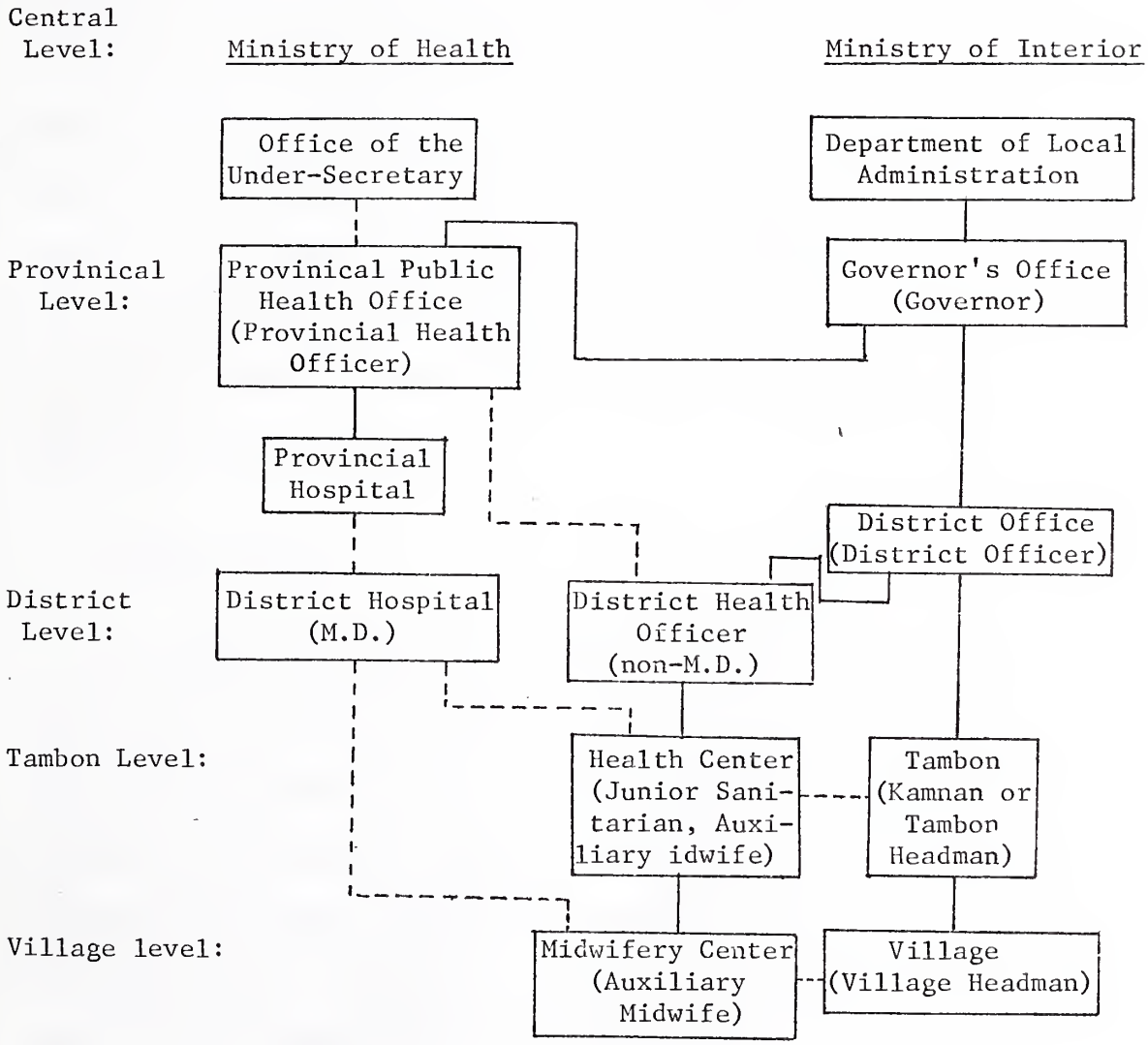
In reality, the supervision from the provincial health office is minimal, sporadic, and administrative, not technical. In addition, there is no real cooperation between different levels. This is perhaps the weakest point in the rural health system, and significant improvement is necessary if it is to reach the high degree of efficiency and effectiveness that is prominent at the central level (33).

The western orientation emphasizing large, expensively equipped hospitals has led to a lack of sufficient financial investment at the local level (34). Historically, investment has been concentrated on large hospitals in urban centers, such as Bangkok, and provincial capitals, while fewer resources are channeled to rural areas. Progress is being made, but allocation disparities are still very much evident even within the rural health budget itself. The major proportion still goes to the provincially centered programs and capital needs rather than to the district, tambon, or village based facilities (11).

In spite of the health services provided, coverage of the population extends to only 25-30% (35). One of the main reasons for this is that services are accessible only to those who are within easy reach of a particular facility; significant portions of the rural population are unable to obtain transportation to needed or provided services. In addition, medical services are not equally

Figure 3

Network and Administrative Relationship Between Ministry of Public Health and Ministry of Interior, Thailand (1978) (33)



represented throughout the network of health service units. All too often there is a gradual abbreviation of available services, resources, and qualified personnel as one proceeds from provincial hospitals to the most peripheral midwifery centers. For example, the yearly budget of a health center is about 9000 baht (US$450.) and from this amount all pharmaceutical and general supplies are provided. As a result, what is actually available to children and mothers at the rural health units is a far cry from what would be optimal in terms of the ranges of services, health personnel capabilities, and resources.

FISCAL RESOURCES

As in the case in most developing countries, the Royal Thai government is confronted with the overwhelming task of providing nationwide comprehensive health care in spite of financial limitations and manpower shortages. Numerous statistics have been published by the MOPH concerning the amounts spent on health as a percentage of the total budget; the most striking feature of these figures is the degree to which they vary, depending upon which author is citing the official government statistics.

Wasi states that prior to 1976, 3% of total government expenditures were for health, and that during that year funding doubled, both as a proportion of total expenditures and in absolute figures; however, the budget was cut to 4% in 1977, because of major increases in defense spending. From 1968 to 1970, government health expenditures as a percentage of gross domestic products (GDP)

increased from 0.56 to 0.81, paralleling similar increases in GDP and total government health, consumer commodity, and consumer health expenditures (1).

The MOPH has published similar data, and for recent years the proportion of total government budget spent on health has remained approximately the same: 4.2% in 1978, 4.5% in 1979, and 4.4% in 1980 (36). These percentages refer only to the budget of the MOPH, and if the other ministries participating indirectly in health activities are considered, the percentage will be somewhat higher.

Another means of expressing health expenditures is as a proportion of gross national product (GNP). In 1977, 4.16% of the total GNP was spent on health; of this, more than 2/3 was spent by the private sector, the remainder by the Thai government. There are major consequences of having such a large proportion spent by private sources. For example, these funds are not spent or distributed in an equitable fashion, and they are not subject to rational planning schemes (8).

What these figures meant for the individual Thai citizen, in 1965, was that with a per capita GNP of $126. (1965 US dollars), approximately US $.60 was spent on health per capita (15). This amount may not seem worth mentioning, but compared with other Asian countries, it is significant. Indonesia, for example, spent US $.20 per capita on health in 1965, given a GNP per capita of US $99. The Thai figures represented a 112% increase from eight years before, while those in Indonesia were a 34% decrease over the same period. Given trends in productivity and expenditures on health, it has been

estimated that by the year 2000, Thailand will be spending almost US $2.00 (1965 US dollars) and Indonesia only US $.25 (37).

HEALTH MANPOWER RESOURCES

In addition to funding limitations, Thailand suffers from a shortage and maldistribution of health personnel. In 1978, there were approximately 8,000 physicians registered in the Thai Medical Council, but of these, an indeterminate number are currently not practicing, and 1,200-1,600 are living and practicing in the United States. Furthermore, the actively practicing physicians in Thailand are strikingly maldistributed; over 4,000 are practicing in Bangkok, while the remaining 1,500 are situated throughout the provinces. In 1978, there were as many physicians in the three Bangkok medical schools as in the rural provinces. Thus, in Bangkok, where 10% of the population resides, 73% of the nation's physicians are practicing.

This man-power shortage is more severe in provincial areas, since approximately 75% of the total physicians are located in the urban provincial capitals. The result is a physician to population ratio of 1:100,000-200,000 in outlying rural areas, 1:7,600 for the entire country and 1:940 in Bangkok. In addition, many rural physicians practice privately rather than in the much needed government service positions (8).

There are several reasons for this internal "brain drain" to urban areas, especially Bangkok, similar to the external "brain drain" to the United States which was a problem from the early 60"s

to about 1974 when the US imposed immigration restrictions (1). In the case of the latter, physicians sought quality residency training programs, or faculty positions, adapted to the living and working standards of the US, and returned infrequently to Thailand. Similarly, students educated at urban Thai medical schools, have become hospital -oriented physicians, neither interested in nor trained for rural medicine (1). In spite of new government stipulations that medical school graduates spend three years working in a rural district hospital, or pay the equivalent of US$20,000., it is doubtful that an adequate and permanent corps of rural physicians will emerge, since most still prefer urban living and well-equipped and adequately staffed hospitals. However, initial reports are indicating that up to 50% of the recent graduates in rural government service are remaining in their rural positions (8).

The distribution of other health personnel follows this pattern. In 1980, 85% of the nation's 1,912 pharmacists and 52.8% of the 15,000 nurses were located in Bangkok and nearly 100% of dentists were located in Bangkok or provincial capitals (38). As a result, auxiliary health personnel, such as health assistants, nurse's aides, and volunteers (village healthpost volunteers, village health communicators, and traditional birth attendants) and the small number of doctors and nurses staffing the district hospitals form the health care delivery system at the rural level. This essential role of health auxiliaries, well recognized throughout the developing world has also been recognized at the government level in Thailand, and their training is one of the major goals of health planning efforts. Unfortunately, this

maldistribution of health resources and manpower is increasing yearly. In 1970, for example, there was a 24-fold difference in the ratios of doctors to population between Bangkok and surrounding rural provincial areas, while in 1964 the difference was only 17-fold (14). This trend portends deteriorating health conditions for rural populations, already suffering from the burdens of inadequate resources.

PATTERNS OF HEALTH UTILIZATION

To a casual observer, the most striking aspect of the Thai rural health system is its lack of activity. At first glance, midwives or health workers appear to spend very little time seeing patients; a long-term experience with the system does little to change this impression (34). Cunningham, in 1970, summarized the problem saying "the underusage of modern health institutions is a significant issue in Thailand", and numerous other observers of the Thai rural health system have agreed with this conclusion (39).

Utilization of health resources is a complex issue given the many interrelated factors concerning health care seekers, providers, and various intervening parameters. The seeker's perception of the nature of the illness, his knowledge of the care available to him, past experiences, mobility, financial resources, and socio-economic and cultural qualities all determine acceptability of health care services. The level of activity at government facilities is determined by the quality and extent of services, the personal manner of workers, the expense of services, the length of time spent

waiting to be seen, and the facility's location. In addition, intervening factors affect the ultimate choice of a person seeking care; these include distance involved and available means of transportation, recommendations by friends and family, and alternatives. Locally, another option is the use of traditional healers, while regional hospitals, such as those in Bangkok and Chiang Mai, offer more distant alternatives (34).

Indigenous practitioners are ignored by most Western-oriented Thai physicians and with the exception of traditional birth attendants, are excluded from all government efforts to extend health care to rural areas. Nevertheless, they serve a substantial population in these areas (34). Three major types include traditional birth attendants, or granny midwives, Thai traditional healers, and those using Chinese traditional medicine. Thai healers use herbal medicines, massage, faith in Buddhism, and magic in various forms such as montra, or sacred citation, spirit worshipping, and fortune telling (1). Chinese traditional medicine consists of a special examination, called mae, which is a diagnosis of disease from careful palpation of the radial pulse, Chinese herbal medicine, and acupuncture (1). It is important to emphasize that these indigenous practitioners are not charlatans in the Western sense, but often well-trained and experienced healers (34).

Two other local types of health care providers are the injectionist and the local druggist. Injectionists are local villagers, usually working out of their own homes, who use injectable prescription drugs, readily available from local

druggists. They are either self-taught by experience, and by reading the inserts in pharmaceutical supplies or previously trained as military medics (40). They are often quite effective and perform needed services in very remote areas, but this is often outweighed by the consequences of a lack of any extensive formal training.

Drugstores are one of the major local resources for people seeking medical help because they are highly accessible, and because most pharmaceutical supplies can be obtained by them and their customers without prescription. In this case, the "druggist" himself becomes the health provider; in spite of the fact that very few have received any formal pharmacist training, most learn which medications are required to treat the most common diseases (42).

In 1977, the Institute for Population and Social Research at the Mahidol University in Bangkok investigated the underutilization of health resources. The study entitled "The Effect of Location on Family Planning and Health Facility Use," surveyed Suphanburi province to discover the causes of differential use of health facilities (40).

Government statistics, obtained from health facilities in Suphanburi demonstrate that the provincial hospital provides the majority of inpatient services (89%) and a significant portion (35%) of out-patient services. In direct contrast, on a typical working day at the tambon HC, as many patients are seen as personnel present-- about three. These statistics emphasize the lack of functioning of the hierarchical system, with excess use of the provincial hospital, underutilization of out- lying health service

units, and no effective intermediate level of care. The result is an inadequate and inefficient primary care system (40). Sources sought for conditions requiring medical attention in Suphanburi are shown in Table 6 (34). Two separate health needs are assessed, minor illness and serious medical problems, and the providers are divided into five separate groups. For minor illness, 58% of households sought assistance from druggists, 21.5% from all government facilities, 10.3% from private clinics and hospitals and 8.1% from traditional healers. The rural government health centers scored a low 9.3%. For serious medical problems, 65.6% sought government facilities, clearly giving these a dominant role, compared to 19% for private clinics, and 7.9% for traditional healers. Approximately the same numbers preferred traditional healers for both minor and serious illness, suggesting that there is a core of the rural population putting their trust primarily in traditional medicine. Also, only 4.5% with major illnesses sought drugstores, as opposed to 58% for minor ones; this latter figure was still equal to the percentage seeking care at the rural health centers (34).

The study also examined the reasons for using the district and provincial hospitals. (Table 7) The three major factors, accounting for 35.2% at the DH and 60.4% at the PH, are familiarity, proximity, and the suggestion of others. Of note is that 10.6% stated that their reason for attending was that they were government officials and therefore received a discount on charges. When asked how they would most like to see the government rural health system change, three major concerns were voiced by the general population: more

Table 6

Percentage Distribution of Health Provider Consulted for Most Recent Minor Illness, Family Planning, and Most Recent Serious Medical Problem in Household (34)

Provider	Minor Illness	Serious Medical Problem
Government hospital in Bangkok	0.9%	16.7%
Changwat hospital	3.3	32.8
Amphoe hospital	3.8	7.7
Health Subcenter[a]	9.3	4.5
Tambdon doctor[b]	3.9	2.7
Mobile clinic	0.1	1.2
Other "government"	0.2	-
"Government" sub-total	21.5	65.6
Private medical doctor	4.2	7.5
Private nurse	0.3	0.4
Private (government) midwife	0.2	0.2
Private hospital in Bangkok	-	1.7
Private hospital, not in Bangkok	1.9	5.6
Private clinics (other)	3.7	3.9
"Private" sub-total	10.3	19.3
Practitioner "maw"	1.6	2.3
Injection doctor	5.2	3.7
Traditional doctor ("maw boran")	1.2	1.9
"Traditional" sub-total	8.0	7.9
Drugstore	57.9	4.5
Small shop which sells drugs	0.1	-
"Commercial" sub-total	58.0	4.5
Do nothing	1.7	0.7
Take care of yourself	1.1	0.4
"Hospital" (what type not mentioned)	0.2	1.6
Others	0.1	-
"Other" sub-total	3.1	2.7
GRAND TOTAL	100.0	100.0
	n = 1,778	n = 1,044

[a]Health Subcenters = Health centers and midwifery centers

[b]Not actual M.D. but villager with limited training in basic medical problems, given status of "doctor" in community.

Table 7

Reasons for Choosing Consulted Hospital (34)

Reason	Provincial Hospital	District Hospital
Recommended (referred)	4.9%	6.7%
Suggested by friends/relatives	4.1	5.4
Good reputation	3.3	7.4
"Suggested" sub-total	12.3	19.5
Familiar with this place	17.2	20.8
Convenient	1.6	4.0
Near	16.4	35.6
"Familiar/near" sub-total	35.2	60.4
"Good-hearted" doctor	0.0	1.3
Better doctors	9.0	1.3
"Doctors" sub-total	9.0	2.6
Better and quicker service	3.3	1.3
Cheaper	4.1	1.3
Better medicine	1.6	4.0
Bigger place/better equipment	13.0	0.6
"Better/bigger/cheaper" sub-total	22.0	7.2
Respondent is government official	10.6	2.7
Others	10.1	7.6
No answer	0.8	0.0
TOTAL	100.0	100.0
	n = 122	n = 149

Chi square is significant at .001

skilled personnel, namely physicians, better and more respectful service, and increased accessibility. Also important were access to better drugs, cheaper costs, and better facilities and equipment.

These reasons are clearly at the basis of the problem of underutilization of rural health facilities. The rural people want health workers who can treat conditions adequately, at reasonable cost, and in a respectful manner, and they want health facilities that can be reached easily. Unless these issues are addressed and progress made towards better planning and more effective implementation, the problem of underutilization will continue to persist at the rural level (34).

V. NATIONAL HEALTH POLICY AND PLANNING

GENERAL

At present, Thailand has no national agency in charge of overall health planning, although most authority rests with the National Economic and Social Development Board (NESDB), a centrally administered unit of the Royal Thai Government. In 1972, the Division of Health Planning was established within the MOPH, and two years later a national health planning sub-committee was appointed by the NESDB from various health and health-related agencies including the newly created Division of Health Planning. This sub-committee has prepared the health policies and national health plans approved and promulgated by the NESDB and the government (1).

The Division of Health Planning (DHP) has several roles which have evolved over time including the collection of health-related data and the coordination and preparation of the programs proposed by the various divisions within the MOPH. In this way, the DHP has had a central role in determining policy formulation and development for the MOPH and the entire health system (32).

In the 1960's, ten priorities were identified, forming the foundation for the primary care system developed over the following 15 years. These priorities included maternal and child health, nutrition, family planning, immunization, water and sanitation, basic medical care, health education, referral systems, household drug availability, and vital statistics compilation. In most respects, they identified health problems still in need of attention today.

Of the priorities mentioned, family planning has received the most attention in terms of planning effort, budget allocation and foreign funding. Stemming from the realization in the 1960's that the annual growth rate of 3.2% was one of the highest in the world and a major deterrent to the country's efforts in socio-economic development, the government devised in 1970 the National Family Planning Program, supporting voluntary family planning. This program was eventually incorporated into the Third Five-Year National Economic and Social Development Plan from 1972-1976 and had as its main objective a reduction in the growth rate from 3.2% to 2.5% in 1976--a goal subsequently attained. Proposed means included integrating family planning into existing health services, training public health personnel in techniques of contraception, and educating rural population on the need for and availability of methods of contraception (44).

The first Thai National Health Plan was instituted as part of the First Five-Year National Economic and Social Development Plan for the period between 1961-1966; the main emphasis was on the construction and expansion of health facilities. The second and third five-year plans, covering the years 1967-1971 and 1972-1976 respectively, recognized the importance of health itself as an integral aspect of social development. The two plans attempted to accelerate the growth of rural health and medical care, improve the condition of existing services, with greater attention paid to distribution for low income groups, and expand health facilities. This third plan was implemented at the point of major reorganization within the MOPH facilitating the decentralization of management to

the provinces and strengthening coordination of the central level. As mentioned above, the institution of the DHP was also established at this time (32).

The fourth National Health Plan, was planned for 1977-1981. In contrast to prior plans, this was devised using the strategies of country health programming and project formulation, with assistance from the World Health Organization (32).

Country health programming is a method of problem identification relying on "brainstorming sessions" with informal observers who identify specific health targets and determine the services required to effect improvement in health status. Health or health-related problems are clarified, and priorities and objectives selected; these are translated into programs with potential for successful implementation (42).

The priority issues, target populations, and specific programs planned are what one would expect given the health status of the country. Major emphasis has been placed on the improvement of health conditions for the rural populations, especially at the village level and for children and mothers, through comprehensive integrated services (32).

The guidelines used in setting up the national health policy are (43):

1) Increase the numbers and capability of health personnel

2) Improve and expand curative health services

3) Provide control, prevention, and treatment of communicable diseases

4) Strengthen the medical technology aspect of provincial health services

5) Decrease population growth by providing effective family planning services

6) Improve the health status of mother and child by providing organized MCH services

7) Improve nutritional status of the population and prevent deaths related to malnutrition.

8) Protect the population from environmental pollution and improve level of sanitation

9) Improve and control the production, distribution and prescription system of drugs

10) Expand community mental health services

11) Expand dental services

12) Promote health education

Nineteen national development projects have been created to meet these guidelines, and those directly relating to child health in rural areas are the Provincial Health Care, Health Education, Family Planning, Dental Health and Nutrition Projects. Specific objectives for each of these have been set; for example, as part of the Provincial Health Care Project, a level of 80% of the 0-4 year age group has been established as the goal for DPT immunizations, and a level of 100% of attended deliveries for BCG (46).

Recommended measures have also been designed specifically for application in rural areas. A balance of the curative, preventive, promotive, and rehabilitative facets of provided services and the expansion of the capabilities of existing personnel are two examples of suggested measures. In addition, two new types of village-based volunteers are being trained and promoted - the village healthpost volunteer (VHV) and the village health communicator (VHC), who will act as coordinators between the government officials and the rural villagers, giving simple medical care, disseminating health information, and distributing government pharmaceutical products (43).

Much could be written concerning the various programs planned by the NESDB for the 4th Five-Year Plan, and for every determinant of significant morbidity and mortality, there is a governmental objective, a priority target group, and a percent of coverage of that population to be reached by 1981. The important point is that in terms of general planning, rural health and primary health care are receiving major attention, and children and mothers highest priority. Primary health care refers to simple, low-cost technology, community-based and self-reliant health care, and strategies concerning this recognize that Western-oriented and hospital-centered care is inadequate to reach substantial portions of the rural population (22).

In spite of the visible efforts the Royal Thai Government has made in alleviating major problems in the national health care system, a multitude of factors minimize the efforts of any rational

government intervention. In addition to the fact that there are always gaps between policy and reality, given constraints in resources, popular acceptance of ideas, and limitations of the scope of the entire planning effort, the system insures that further discrepancies between policy and implementation are created. Government plans devised at the highest level are all too often broad and without the practical details that facilitate evaluation or implementation (32). In addition, the bureaucratic system is often insensitive to the government policy (1). The net result is evident in the health planning process in Thailand. That is, health policy devised at the NESDB level, once received by the individual divisions within the MOPH, usually undergoes further modification, depending upon the availability of fiscal resources and the preference of the staffs involved. Thus, it is to these specific divisions that one must turn to find a set of health programs in the process of implementation.

CURRENT HEALTH PROGRAMS

Within the Department of Health in the MOPH are the Divisions of Family Health and Nutrition, the two agencies mainly involved in rural health programs relating directly to maternal and child health. The Under-Secretary of State for Public Health is also directly involved with rural health development, through the Division of Health Education and with the nationwide health auxiliary-volunteer program.

The Family Health and Nutrition Divisions have concentrated their efforts historically on the provision of preventive services for small children and pregnant women in both the rural and urban areas. As part of the 4th Five-Year Plan, the following projects have been devised by these agencies:

1.) Maternal and Child Health Project

2.) National Food and Nutrition Plan

3.) Accelerated Nutrition and MCH Project

4.) Population Project

Maternal and Child Health Project

Specific objectives of this three-year project include: providing ante-natal care to 60%, immunizations with tetanus toxoid to 40%, and delivery attendance to 50% of pregnant women, promoting health education in the areas of post-partum care, hygiene, and breast-feeding to 60% of women delivering, supplying minerals and vitamins to 30% of nutritionally deficient mothers, and immunizing 70% of children under two years with DPT and BCG. It is hoped that by providing high quality services, the morbidity and mortality rates of these groups will be decreased and the health status improved (44).

National Food and Nutrition Plan

Though comprehensive in its conception and reliance upon cooperation between various disciplines, this plan has been adopted by the Division of Nutrition. Strategies include nutrition

education, health promotion and food supplementation of pregnant and lactating women, nutrition surveillance and supplementation of infants and preschool children, the training of health personnel such as village volunteers to aid in this task, and the expansion of facilities such as Child Nutrition Centers (CNC) to aid in implementing these objectives. Twenty-nine provinces throughout Thailand have been selected on the basis of high percentage of protein-calorie malnutrition and low-socioeconomic status; the main goal is the improvement of the health status of 30% of the target populations of women and children (45).

To date, progress has been made in the widespread promotion of breast-feeding, the construction of CNC's, a type of day-care center,and in food supplementation programs, although the latter have not been shown to have reduced the incidence of malnutrition among approximately 200,000 under-nourished pre-schoolers now receiving supplements and weight monitoring as part of this project (3,45).

A pilot project in the Ubon province of northeast Thailand has also been developed as part of the national nutrition plan. Relatively conservative, it involves the production of nutritional supplements for pre-school children using local products. A proposal to replicate this project was submitted to the Nutrition Division, and the Government Budget Bureau has since cut the budget drastically for this expanded project. As Michael Maurier of the Division of Health Planning explains, this gives one "some idea where maternal and child health is located on the current Thai

Government's overall priority list" (46).

Accelerated Nutrition and MCH Project in Four Provinces

This project is identical to the two programs described above for MCH and nutrition, with the exception that four of the 29 designated provinces have been singled out for special intensive activities to decrease the prevalence of protein-calorie malnutrition by 20% and infant mortality rate by 50% and thus determining if intensive action schemes are feasible means of improving health status (47).

Population Project

The Population Project is a continuation of the National Family Planning Project described above and receives funding from the Royal Thai Government as well as from several foreign agencies. Its main goal is to reduce the population growth rate from 2.5% in 1977 to 2.1% in 1981. This objective will be accomplished by expanding the rural health care infrastructure, increasing the numbers and qualifications of auxiliary health personnel in rural areas, introducing a corps of village-based volunteer workers, and promoting community support of and demand for family planning services. An additional aim is to reduce maternal and infant mortality rates, since it has been well established that a decrease in these facilitates reductions in the population growth rate (41,48). The project is in the process of implementation in 20 of Thailand's provinces which have lower rates than the national

average of family planning acceptance and extent of rural health coverage (48).

The Rural Primary Health Care Expansion Project is a "discrete but integrated component of the larger multi-donor population project" described above (48). The main goal of this project is to make rural health care more accessible by developing training programs for a number of district and lower-level health workers, in addition to providing assistance for the health planning, evaluation and research capabilities of the staff of the MOPH.

Two main categories of personnel training will be described: basic training for village healthpost volunteers, village health communicators,[8] auxiliary midwives, and assistant health workers; and in-service training for sanitarians, and district and provincial administrators (48).

The training of VHV's and VHC's has received support following preliminary evaluation data on the use of these local volunteers in the current Lampang Health Development Project. The government's interest in primary care and the use of local village resources has made such a program highly desirable; through the Rural Expansion Project, 79,655 VHC's and 7,965 VHV's will be trained. Selection of trainees is usually done by the communities involved.

VHC's are concerned with the dissemination of health information, education, and communication, and the VHV's provide minor health care, dispense contraceptives, provide basic health education, participate in health-related programs, and act as a

referral liaison between villagers and government officials. The 5-day course for VHC's and the 20-day course for VHV's consists of a set of problem-solving exercises on basic curative and preventive medicine. Supervision is provided by the tambon health center workers, although this is variable, erratic, and without clear-cut guidelines. In addition, there is no system for retraining, nor has there been any systematic evaluation of training courses and effectiveness of volunteers. Unfortunately, until the Government is aware of the extent and quality of VHV/VHC training and provision of health care, it is doubtful that any system of retraining will be devised.

Additional health manpower efforts include: the training of 900 rural area nurses in a one-year practitioner training course in public health and clinical/administrative skills; upgrading the basic medical care skills of 2,250 auxiliary midwives and sanitarians with a four-month course in curative care; and the training of 740 health assistants through a six-week course for those assigned to peripheral midwifery centers and a four-week course for those at family planning clinics (48).

A second approach to health care development receiving renewed interest from the government is that of integrated programs. In contrast to projects emphasizing one aspect of medical care, the integrated system takes into account all aspects and is based on the premise that populations may be more receptive to preventive services if health facilities acquire the reputation of giving effective treatment when sick people require it (49).

Special Demonstration Projects

There are many demonstration, or pilot, projects that have been proposed and implemented as part of the 4th 5-Year Plan. Two using a multisectoral, as well as an integrated approach to promote total community development are the Songkhla and Samerng Projects. Another more strictly public-health oriented and integrated one is the Lampang Health Development Project (35).

The Songkhla Project, located in the southern region of Thailand, consists of the utilization of traditional healers and birth attendants to implement family planning activities. The overall objective is to promote social and economic development (50).

The Samerng Project, funded jointly by the Thai Government, World Health Organization, and UNICEF, also emphasizes nutrition and family planning. It utilizes the local population, such as traditional midwives, school teachers, and other volunteers who receive a 10-day course and periodic refresher courses (51).

The Lampang Health Development Project (LHDP) is at present the most comprehensive, covering an entire province in the northern region, with a population of over 600,000. It is also the pilot project through which the actual field work for this thesis was undertaken. Funded by both the Thai government and the U.S. Agency for International Development, the program was encouraged by the MOPH in order to explore ways of bringing basic health services into one innovative, coordinated, and cost-effective operational unit

within reach of a majority of the rural population.

Specific goals as originally outlined are:

1.) To expand health care coverage to at least two-thirds of the rural population,especially women in child-bearing years and pre-school age children, with an emphasis on family planning,MCH, and nutrition.

2.) To establish a model integrated provincial health delivery which extends promotive, preventive, and curative services to every subdistrict health center, and to establish "Primary Health Care"in every village through trained VHV's, VHC's, and TBS's.

3.) To establish a provincial health care system that is most cost-effective, the key features of which can be replicated within the limitations of the resources of the Thai government (33).

These encompassing objectives have been translated into actual practice, using a set of "innovations". For example, the provincial rural health infrastructure has been reorganized under a single administrative unit, the Provincial Public Health Office; a Community Health Department has been established within the provincial hospital to extend services into out-lying areas. A new type of community health paraphysician, called wechakorn in Thai, has been created, and various types of trained volunteers emplyed, such as VHV's, VHC's, and TBA's. Finally, an attempt has been made to stimulate community and private sector involvement. (33).

Th· Community Health Department (CHD) was begun as an attempt to coordinate the activities of the PH with those of the more rural health subcenters and provide out-patient care and health education services. The first of its kind in Thailand, this department has expanded the role of the provincial hospital to one emphasizing health maintenance as well as medical treatment.

Early activities consisted of education programs for well-baby, family planning, and pre- and post-natal clinics and in-patient wards. As the staff expanded to two physicians, several nurses, health educators, a nutritionist, and wechakorns, the department was able to link its services with peripheral health service units. This link was originally started as a mobile vasectomy team, but was expanded to include a full range of services; the mobile unit presently makes biweekly visits, each time to a different village throughout the Lampang province. Other CHD services to rural areas consist of medical referrals, technical supervision to peripheral workers, and occasional special programs, such as immunization campaigns. It is apparent that these activities are far outweighed by those provided through the CHD at the PH itself (52,53). (Figures 4 and 5)

The training and employment of community volunteers has been one of the LHDP's major strategies and this approach has been adopted as part of the current national plan to alleviate the problem of manpower shortage. Local health committees are formed to share in the selection of appropriate candidates for these positions, following which the VHV receives a 10-day training

Figure 4

Current and Planned Future Function - Community Health Department

Lampang Provincial Hospital (1979) (52)

Community Health Department

Hospital-Based Services	Community-Based Services	Support for Peripheral Services
-Immunizations	-Jail health	-Medical referrals
-Nutrition	-School health	-Mobile clinics
-Health education	-Community information/education	-Special services
-Communicable disease control and surveillance	-Mobile health services	-Technical supervision
-Outpatient medical care	-Coordination of health activities in the Lampang municipality	
-Environmental sanitation		
-Social Welfare		
*-Drug addict care		
*-Special disease clinics		
-Medical care by radio for isolate areas		
*-Malnourished children's ward		
*-Ward for contagious diseases		
*-Drug Addiction ward		
*-Geriatric services		

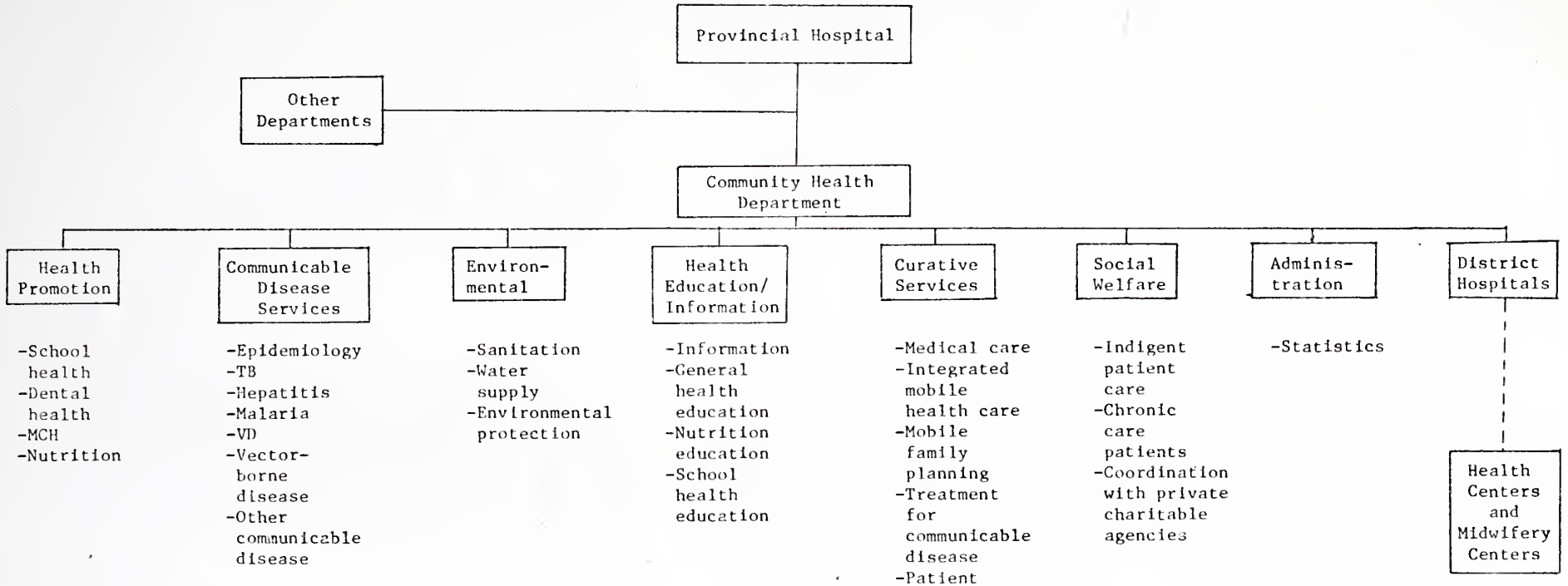
*New additions to current activities to be added during 1981-86 period

Figure 5

Responsibilities of the Community Health Department

Lampang Provincial Hospital

1979 (52)



course, and the VHC a 2-day course, in contrast to the national plan calling for 20 and 5-day courses respectively. The TBA also receives 10 days of instruction on modern, sterile delivery techniques and MCH; this is a unique feature of the LHDP and is not being replicated by the government. At the end of the 5-year program in 1979, approximately 5,363 VHC's, 900 VHV's, and 352 TBA's had been trained (54,33).

Another important feature has been the training of a group of community paramedics, or wechakorns. Selected from a group of trained midwives, sanitarians, and nurse's aides, they have received problem-oriented instruction. Their role is to expand the availability of curative, preventive, and promotive services at the health center level, thereby reducing the burden on the physicians at the more central levels and promoting utilization of peripheral facilities (54).

At the end of the one-year course, combining both classroom and practical experience, the wechakorn is able to take a medical history, perform the physical examination and basic laboratory tests, manage common diseases and minor injuries, provide a full spectrum of maternal and child health care, and recognize illnesses requiring referral. By 1979, 96 wechakorns had been trained and placed in various health centers (54).

The final phases of implementation of the project were completed in 1979. Table 8 and 9 summarize the increases in the number of facilities and the geographic and population coverage by health facilities and personnel; significant increases at the

Table 8

Health Facilities Development in Lampang Province, 1974-1979 (33)

		1974	1979	Notes
Village Health Posts		0	901	Many villages have more than one HP at request of health committees or government officials.
Child Nutrition Centers	- Total	11	93	Many CNC developed through private sector support
	- At tambon level	11	11	
	- At village level	0	82	
Midwifery Centers		37	23	Many MC upgraded to health center.
Health Centers		34	71	All 71 HC have a wechakorn
District Hospitals		2	7	8 wechakorn assigned to 7 district hospitals.
Provincial Hospital	- Number beds	200-300	500-600	Provincial Hospital becoming Regional (referral) Hospital
	- Number physicians	14	29	
	- Number wechakorn	0	11	Wechakorn assigned to OPD and Community Health Department
	- Community Health Department	0	1	
	- Rural Mobile Clinic	0	1	Rural Mobile Clinic operates 2-3 times monthly

Table 9

Summary of Geographical and Population Coverage by Lampang Rural Health Facilities and Trained Personnel, 1974-1979 (33)

	1974	1979
Number of Districts (ampur)	11	12
Number of Sub-districts (tambon)	75	78
Number of Villages (muban)	538	592
District Level Coverage		
Proportion of districts with district hospital	18%	58%
Proportion of district hospitals with wechakorn	0%	100%
Sub-district Level Coverage		
Proportion of sub-districts with health centers	45%	91%
Proportion of health centers with wechakorn	0%	100%
Proportion of sub-districts with CNC	14.6%	14.1%
Village Level Coverage		
Proportion of villages with CNC	0%	14%
Proportion of villages with trained TBA	-	59%
Proportion of villages with health post	0%	100%
Population Coverage		
Proportion of rural population in areas covered by LHDP organized health system (availability of services)	0%	100%
Proportion of rural target population served by provincial health system (estimated acceptance of services)	20%	65%

district, subdistrict and village level are evident. Maps of Lampang province demonstrating the number and distribution of health service units prior to implementation of the LHDP in 1974 and at its completion in 1979 emphasize further the expansion of the rural health infrastructure (33). (Figures 6 and 7)

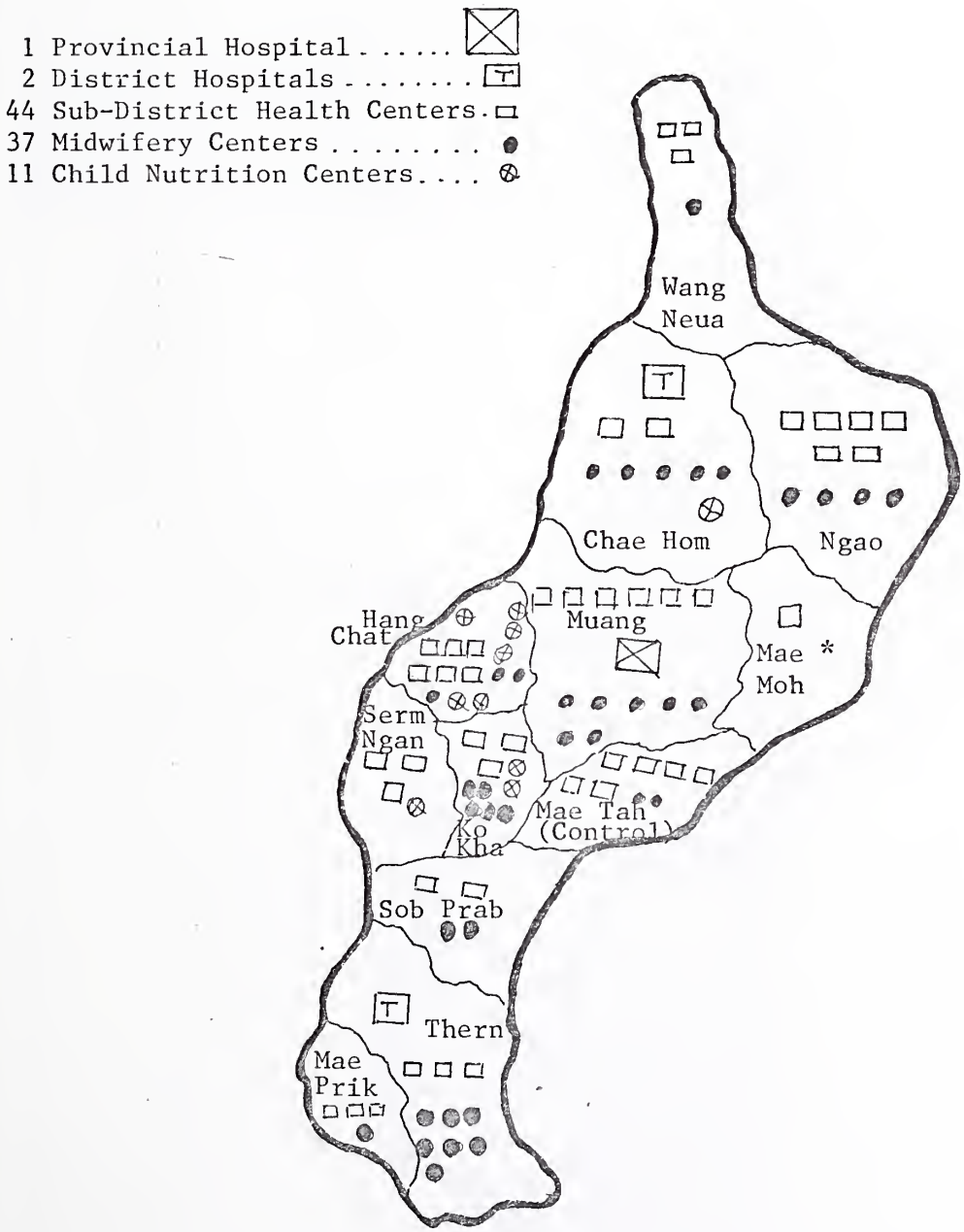
Whether this expansion of health care coverage will have any lasting effect on the health status of the Lampang populace and prove to be cost-effective and replicable remains to be seen. An extensive evaluation relating the service input of the project to the health status of the population is nearing completion (55).

In spite of the lack of evaluation data, some conclusions concerning the project's effect have been tentatively proposed. At first glance, it appears that although at the HC level there has been a 100% increase in service utilization as well as a sharp increase in the demand for services at the DH, the major activities of the project have had little impact on health status. Reasons proposed are that there has been no real emphasis on the problems of water supply, sanitation, immunizations, and nutritional deficiencies (56). In addition, there have been difficulties maintaining consistent standards of training, supervision, and technical support of health workers. The workers, in turn, place major emphasis on curative care since this is most often demanded, resulting in a side-tracking of efforts to prevent problems such as malnutrition, family planning, and sanitation--areas which have the highest potential for impact. Too make matters worse, VHV's are usually inadequately prepared to deal with even the simplest medical

Figure 6

Map Of Lampang Province Showing Distribution

Of Health Service Units-1974 (33)

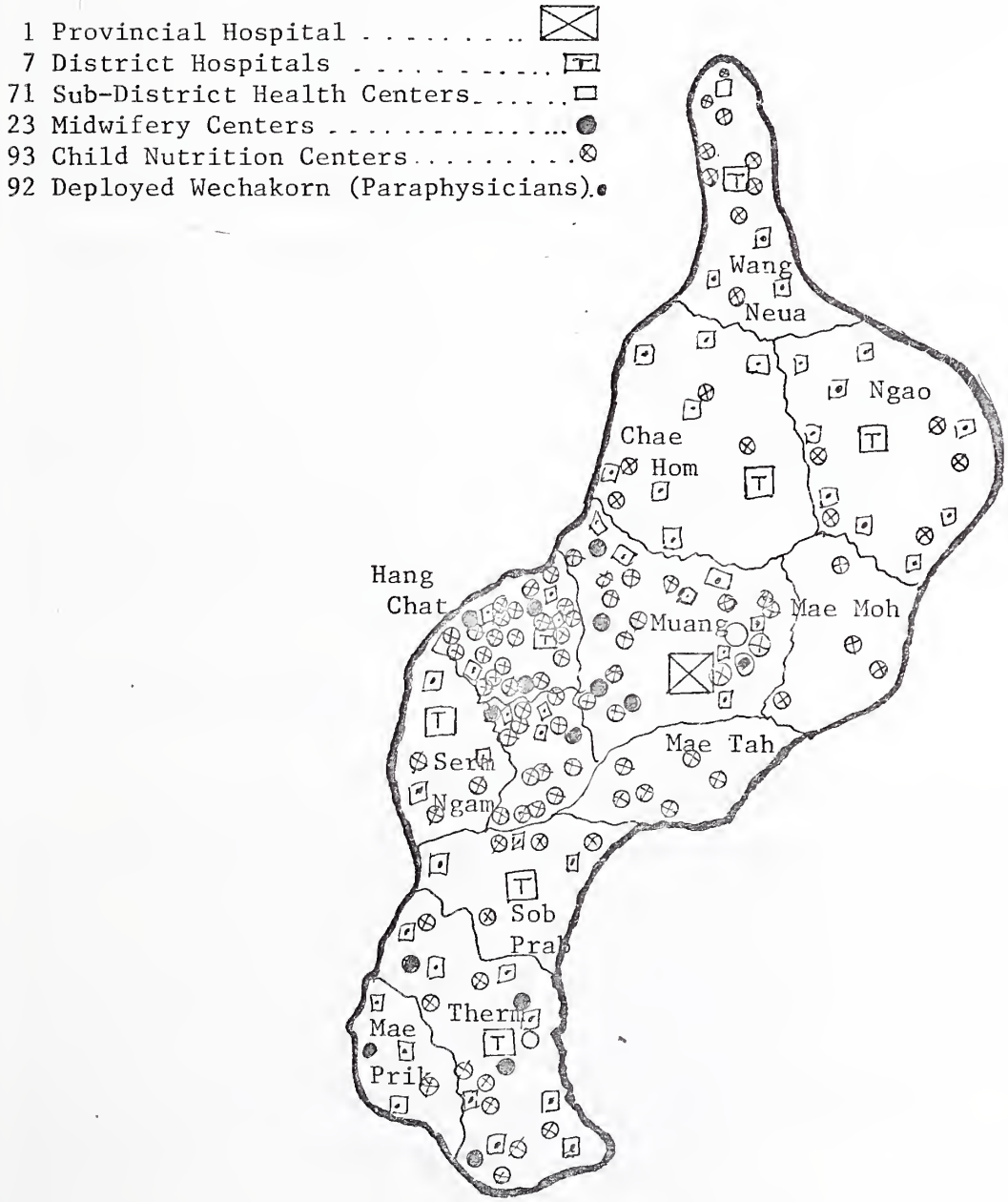


*Mae Moh became a district in 1977 -
it was formerly part of Muang.

Figure 7

Map Of Lampang Province Showing Distribution

Of Health Service Units-1979 (33)



problems, because of medication shortages and the limitations placed on their available time (22).

In 1978, before the Lampang Project had begun an evaluation to determine the success of the various innovations, the Thai government utilized the basic elements for nationwide implementation. Specific facets incorporated into the 20-Province Health Care Expansion Project, and eventually designed to be extended to all 72 provinces include the reorganization of the provincial health administration, the creation of Community Health Departments in all PH's, a modification of the wechakorn concept using nurse and auxiliary midwife practitioners, and health planning and management training programs (48).

SUCCESS TO DATE

As the current Five-Year Plan comes to a close this year, there are many questions to be raised concerning projects described above and the effects of government intervention. Unfortunately, with most evaluations in process, statistics regarding health status as reflected in child and maternal morbidity and mortality status are only now being determined, and most of what is available is speculation, or at best, informed opinion.

However, doubts have been expressed as to the effectiveness of some of the major efforts on child health in rural areas. A survey was done, for example, in 1980, by the Nutrition Division to assess the impact of some of the nutrition intervention programs of the past four years. The results demonstrated that 57% of preschool

children still have some degree of malnutrition (3). This lends support to the prevalent feeling among both health care planners and providers that an effective and affordable intervention to decrease the incidence of malnutrition has yet to be devised and implemented. Additional areas in child health have also been earmarked as needing further improvement, such as immunization and oral rehydration solution availability programs.

The lack of expected success given what are otherwise realistic plans aimed at groups most in need of medical and health care attention raises questions as to why priority areas have not been translated into effective plans of action. Part of the responsibility lies in the fact that the socio-economic status of the population is a major deterrent. The private sector is also often at odds with the public sector, and its efforts are directed only to small portions of the community (3).

Yet, it is perhaps the Thai government that should accept a major portion of this responsibility, in spite of what appears to have been a serious commitment to the development of rural health care and maternal and child health. This hesitation towards actual commitment is revealed in budget restrictions for projects of the 4th Five-Year Plan as well as in the tone of the upcoming 5th Five-Year Plan (1982-86). Michael Maurier, of the Division of Health Planning has expressed dismay at the current government's low priority of maternal and child health (MCH): "The MOPH may hold MCH as a high priority, but unless sufficient funds are available abroad on a grant basis, I do not foresee major nationwide MCH programs in

the near future "(46).

VI. METHODS

The research design of this study consisted of a qualitative analysis of ambulatory pediatric facilities in the Hang Chat district of the Lampang Province of northern Thailand. This area was selected because baseline and follow-up demographic statistics, health status information, and task analysis data on government health workers for the district were available through the Lampang Health Development Project.

Data was obtained through observations and interviews with all health workers in the governmental health service units--health and midwifery centers, district hospital, and Community Health Department of the provincial hospital. In addition, volunteer workers such as village healthpost volunteers (VHV), village health communicators (VHC), and traditional birth attendants (TBA) were interviewed. Two separate interview forms were devised as part of this study; one was used for health workers in government facilities, the other for volunteer workers. (Appendices 3 and 4)

Specific aspects of the health delivery system studied consisted of: general information about health workers and the populations served; ambulatory pediatric services available at health service units, such as preventive, promotive, and curative; maternal services; ancillary services such as community and environmental development; and activities of the various volunteer workers. In addition, a series of open-ended questions and issues were raised in order to give health workers the opportunity to discuss practices of the local villagers, perceived health needs,

and various health-related issues.

The log-books of each subcenter (health and midwifery centers) were examined to record the visits made by all children, ages 0-18, during the two weeks preceding observation; subsequent diagnoses and treatments were recorded. Medications, supplies, instruments, and systems of record-keeping were also completely examined.

The study period consisted of two weeks of preparation of survey forms and observation guidelines, followed by a seven-week period of daily trips to specific government facilities in the Hang Chat district; they included four health centers, three midwifery centers, the Hang Chat district hospital, and Community Health Department (CHD) of the Lampang Provincial Hospital. The homes of several VHV's, VHC's, and TBA's were also visited.

All interview were carried out with the assistance of an interpreter who made discussions with local health workers possible. Initially, there were problems inherent in not being able to converse directly with health workers, and where necessary, interview questions were modified to make them more easily understood. Of particular advantage was that the interpreter is a native of northern Thailand and speaks the local dialect.

It is possible that there are discrepancies between what the workers claim they do in providing medical care and what is actually practiced. An attempt was made to detect these by direct observation of all activities whenever possible. The presence of an observer may have had the effect of introducing an element of

artificiality into the patient-provider interactions observed. This was minimized by spending several days at each site, thereby gaining familiarity with each of the health workers.

VII. BACKGROUND DEMOGRAPHIC DATA

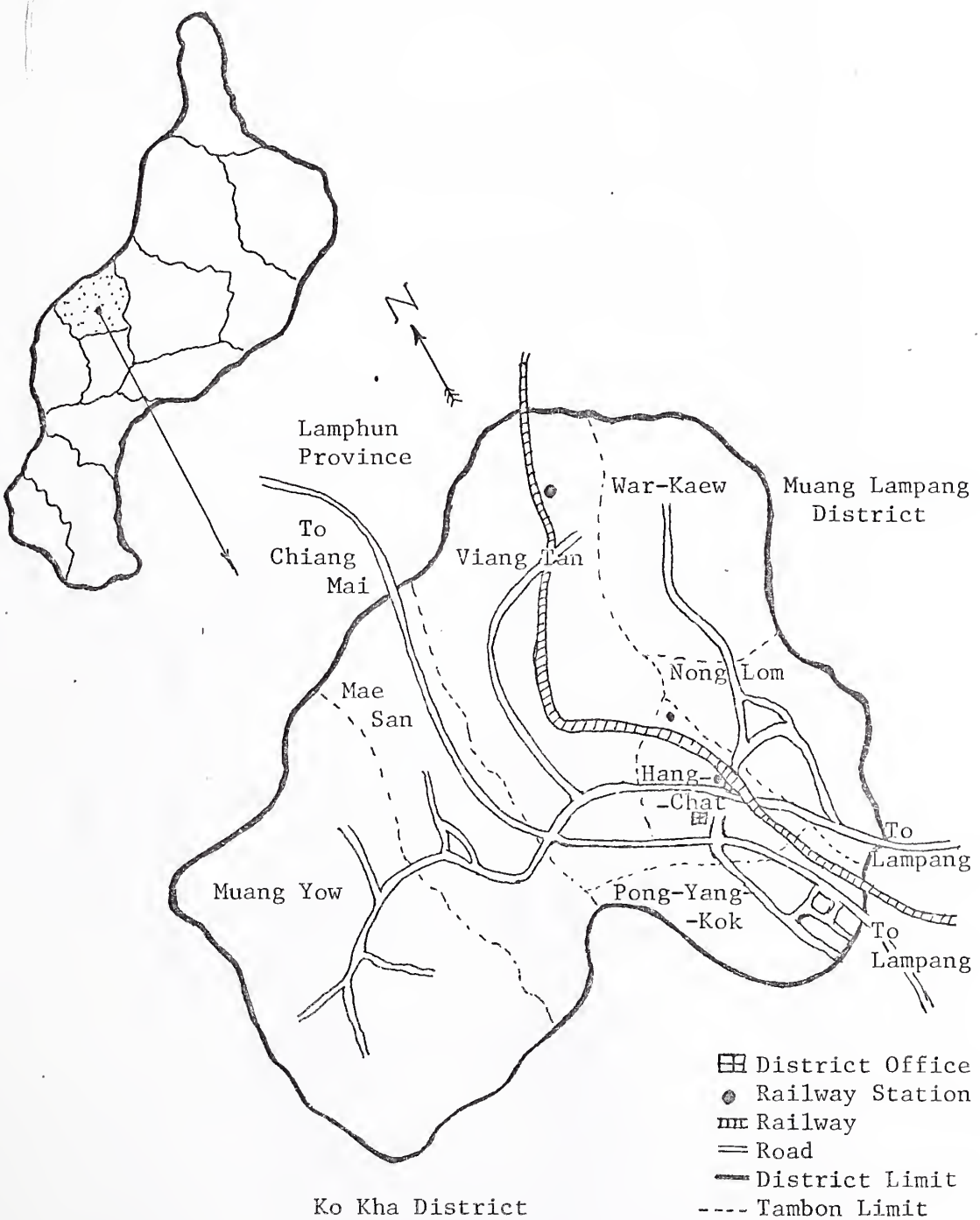
Lampang province has a population of approximately 600,000 and the Hang Chat district, one of twelve districts in the province and located in the central area, a population of 42,000. The district has both mountainous and low-lying arable areas, and is traversed by a major highway and a railroad line. (Figure 8)

The health service infrastructure of this district reflects the three-tiered hierarchical system described previously. The initial implementation area of the Lampang Project, it also has undergone a rapid expansion of health facilities over the past five years. In 1975, its rural health facilities consisted of 6 subdistrict (tambon) health centers, 3 midwifery centers, and 6 child nutrition centers covering a total of 7 tambons, 58 villages, and approximately 8,000 households. At the end of implementation of the Lampang project, in 1979, there were in addition to the above facilities, one district hospital and sixteen more child nutrition centers (33).

The age and sex distributions of the Hang Chat population at the time of baseline study in 1974 (blown-up data) and follow-up (actual sample data) are listed in Table 10 (57). At the time of field work, children aged 14 and under constituted 32% of the population, the male to female ratio being approximately equal. The numbers of women of child-bearing age (15-44) were 56.4% and 48.8%

Figure 8

Map Of Hang Chat District In Lampang Province



Source: Lampang Health Development Project, Lampang, Thailand

Table 10

Age and Sex Distribution of Hang Chat District Population

at Baseline (4/75) and Follow-up (3/79) (57)

	Baseline (Blown-up Data)[a]				Follow-up (Sample Data)			
Age Group	Male	Female	Total	% of Total Population	Male	Female	Total	% of Total Population
<1	314	314	628	1.48	30	30	60	1.45
1-14	7,734	7,384	15,118	35.77	650	611	1,161	30.6
15-44	9,398	9,243	18,641	44.1	978	953	1,931	46.9
45+	3,792	4,081	7,873	18.62	378	486	864	20.9
TOTALS	21,238	21,022	42,260	100.0	2,036	2,080	4,116	99.85
Females 15-44		9,243		21.87		953		23.1
Children under 6			5,129	12.1			342	8.3

[a]Actual sample size unavailable; this has been adjusted for total population size

of the total female population at baseline and follow-up respectively. (Table 10) Of the married women in the former group, 7.8% were pregnant and 54.8% practicing contraception; of those in the latter group, the corresponding figures were 6.9% and 64.5%, giving an 11.5% decrease in fertility and a 17.7% increase in contraceptive use (57).

Information on the health status of the pediatric population is sparse and consists almost entirely of that relating to nutritional status. One aspect of the Community Health Survey taken by the Lampang project in 1977 consisted of an assessment of the nutritional status of pre-school children (age 0-6) in the Hang Chat district. An incidence of all degrees of malnutrition much higher than expected was encountered, and this situation determined to a major extent, the priority placed upon nutrition programs as part of the Lampang project.

Using the Gomez weight-for-age criteria against the Thai standard, 31%, 11%, and 2% of pre-schoolers were found to have first-degree, second degree, and third-degree malnutrition, respectively (54).(Table 11) Having identified the severely, or third-degree, malnourished children, an attempt was made to involve village healthpost volunteers and wechakorns in the regular follow-up and provision of nutritional supplements of these children. At the end of a six-month period, a second study was done, showing that less than 50%, and possibly as few as 25% of these identified children had improved; the status of 42% had remained unchanged (54).(Table 12) An analysis of the information

Table 11

Nutritional Status of Pre-School Children in Hang Chat District 1977 Nutritional Surveillance Data (54)

Classification of Nutritional Status[a]	% of Sample Population[b]
Normal	56%
First-degree malnutrition	31
Second-degree malnutrition	11
Third-degree malnutrition	2
Total	100%
TOTAL MALNOURISHED	44%

[a]Using Gomez weight-for-age against Thai standard; see text for explanation

[b]N = 4,000 children (ages 0-6)

Table 12

Follow-up of Severely (Third-Degree) Malnourished Children in Hang Chat District, 1977-1978 (54)

Follow-up Status of Children Identified with Third-Degree Malnutrition by Nutrition Surveillance Study (1977)	Number		% of Total With Third-Degree Malnutrition	
Misclassified[a]	6		7.8	
Died before follow-up study	3		3.8	
Improved[a]				
to 2nd degree	5		6.5	
to 1st degree	3	20	3.8	25.8
unclassified	12		15.5	
Unchanged	32		41.5	
Unknown[b]	16		20.8	
TOTAL	77		100	

[a] A minimum estimate

[b] It is known that some of these 16 children improved, while others were misclassified. The exact numbers are not known.

recorded by the survey workers demonstrated that many of the VHV's were not fully cooperative and that some of the wechakorns were unable to take an active role in nutrition activities. Additional nutrition surveillance studies have not been done by the Lampang project. The prevailing feeling among members of the project is that new strategies will have to be devised in order to create an awareness of villagers, local health workers, and district and provincial health administrators of the necessity of recognizing nutritional problems and maintaining continued education, follow-up, and regular food supplementation.

The attitudes of women of child-bearing age in the Hang Chat district towards maternal health services are demonstrated in Tables 13-15 (57). During the years 1973-75, approximately 63.3% gave birth at home, while 1.4% delivered at government health centers and another 32.7% at the private and government provincial hospitals. At the end of implementation of the Lampang project, the number of home deliveries had decreased to 43.6%, while those at the government health centers and newly built district hospital increased to 22.8% Those at the private and provincial hospitals remained the same. (Table 13) Over the same time period, the numbers of women receiving pre-natal care increased from 58.7% to 70.3%, with the government health centers and district hospital experiencing the largest increase in demanded services. (Table 14)

A variety of individuals have served and continue to function as delivery attendants; in both 1975 and 1979, traditional birth attendants performed the largest number of deliveries. However,

Table 13

Place of Delivery for Women Giving Birth Within Previous Two Years

Hang Chat District - Baseline (4/75) and Follow-up (3/79) Surveys (57)

Place of Delivery	Baseline (Blown-up Data)[a]		Follow-up (Sample Data)		
	No. Deliveries	%	No. Deliveries	%	
Hospital[b]	476	32.7	31	30.7	32.6
Private Hospital			2	1.9	
Health Center[c]	20	1.4	9	8.9	22.8
District Hospitals			14	13.9	
Home	920	63.3	44	43.6	
Other	38	2.6	1	1.0	
TOTAL	1,454	100.0	101	100.0	

[a]Not available.

[b]The category "hospitals" in the baseline data includes both private and provincial government hospitals, district hospitals had not been so named and were therefore not included in this category. The categories "hospital" and "private hospital" in the follow-up data are combined into one category to be comparable to the "hospital" category in the baseline data.

[c]In the baseline survey, "health centers" included district medical/health centers, which have since been renamed "district hospitals" and are so listed in the follow-up survey data. Therefore, these two categories, "health centers" and "district hospitals," are combined in the follow-up data for comparison with the baseline data.

Table 14

Pre-Natal Care for Women Delivering in Previous Two Years, by Source of Care

Hang Chat District—Baseline (4/75) and Follow-up (3/79) Surveys (57)

Source of Care	Baseline (Blown-up Data)[a]		Follow-up (Sample Data)		
	Number	% of Total Deliveries	Number	% of Total Deliveries	
Hospital[b]	508	34.9	31	30.7	32.6
Private Hospital			2	1.9	
Health Center[c]	172	11.8	19	18.8	29.7
District Hospital			11	10.9	
Midwifery Center	131	9.0	5	4.9	
Private Physician Clinic	4	0.27	0	0	
Traditional Birth Attendant	19	1.3	0	0	
Others (Unspecified)	20	1.4	3	3.0	
Total receiving pre-natal care	854	58.7	71	70.2	
Total number of deliveries	1,454	100.0	101	100.0	

[a]Sample size not available

[b]See note b, Table 13

[c]See note c, Table 13

during the same period of time, those performed by government midwives increased by almost 100%, indicating an increase in either the preference for or the availability and acceptability of midwives, as compared to other delivery attendants. (Table 15)

In 1975, the level of household sanitation was evaluated as part of the baseline study of the Hang Chat district. This study revealed that 97.8% of the households in the district obtained their major water supply from well sources, and that of these wells, only 10.7% had sufficient coverings (57). It was also found that only 38.1% possessed adequate means of waste water disposal and another 43.6% modern, sanitary facilities for excreta disposal. Follow-up study in 1979 demonstrated that although significant improvement occurred in all areas, a substantial proportion of the population is still without basic household means to insure adequate levels of environmental sanitation.

Task Analysis Data

A task analysis study was undertaken as a component of the evaluation of the Lampang Project in order to provide information concerning personnel performances, effectiveness, and efficiency. The study measured quantitatively the service activities carried out by the various types of health personnel. The objectives of this study were:

1.) to measure the level of performance of various types of health personnel before and after project implementation

2.) to determine the relationship between the performance of tasks and the pattern of staff interactions

Table 15

Type of Delivery Attendant Utilized by Women Giving Birth in Previous Two Years

Hang Chat District--Baseline (4/75) and Follow-up (3/79) Surveys (57)

Type of Delivery Attendant	Baseline (Blown-up Data)[a]		Follow-up (Sample Data)	
	Number	%	Number	%
Physician	133	9.1	5	4.9
Nurse	289	19.8	19	18.8
Government Midwife	231	15.9	31	30.7
Traditional Birth Attendant[b]	561	38.6	34	33.7
Neighbor	39	2.7	0	0
Relatives	58	4.0	2	1.9
Husband	41	2.8	0	0
Others	74	5.1	8	7.9
Not Known	28	1.9	2	1.9
Total number of births	1,454	100.0	101	100.0
Total delivered by government workers	653	44.9	55	54.5
Total delivered by government workers and traditional birth attendants	1,214	83.5	89	88.1

[a]Sample data not available

[b]Traditional birth attendants in follow-up period have been trained by Lampang Project

3.) to determine staff effort allocation among types of services rendered

4.) to help establish quantitative standards of performances for various types of health personnel.

More specifically, the study aims at deriving indicators relating to health coverage, personnel and facility activity patterns according to function, average time taken to perform one direct service and the variation pattern, field work and travelling patterns, and referral activity. (58)

The study was performed by actual observations of each health worker during a random sample of one working week at each health facility, including the district hospital, health centers, and midwifery centers in the Hang Chat district. All activities were recorded, noting the length of time spent on each activity classification. In addition to actual observation, administrative documents were examined to gain further insight and information on the performance of tasks.

The average annual number of service contacts per health service unit classified by type of service function and type of health facility are listed in Table 16. (58) These numbers can be used as a rough measure of the scope of health coverage provided through the government health facilities.

The composite activity profile for all health facilities in the Hang Chat District comparing direct services (curative, promotive, preventive--such as maternal and child health (MCH), family planning, nutrition, and general medical services), supportive services (maintenance of physical plant, record- keeping, and

Table 16

Average Annual Number of Service Contacts per Health Service Unit by Type of Service Function and Facility in Hang Chat District (58)

Type of Facility	Type of Service Function				
	MCH	FP	N	Other	Total
District Hospital	4,056	4,004	26	6,136	14,222
Health Center	1,412.67	624	86.67	1,482	3,605.34
Midwifery Center	1,482	416	26	1,274	3,198
TOTAL	6,950.67	5,044	138.67	8,892	21,025.34

MCH = Maternal and Child Health

FP = Family Planning

N = Nutrition

Other = General medical services

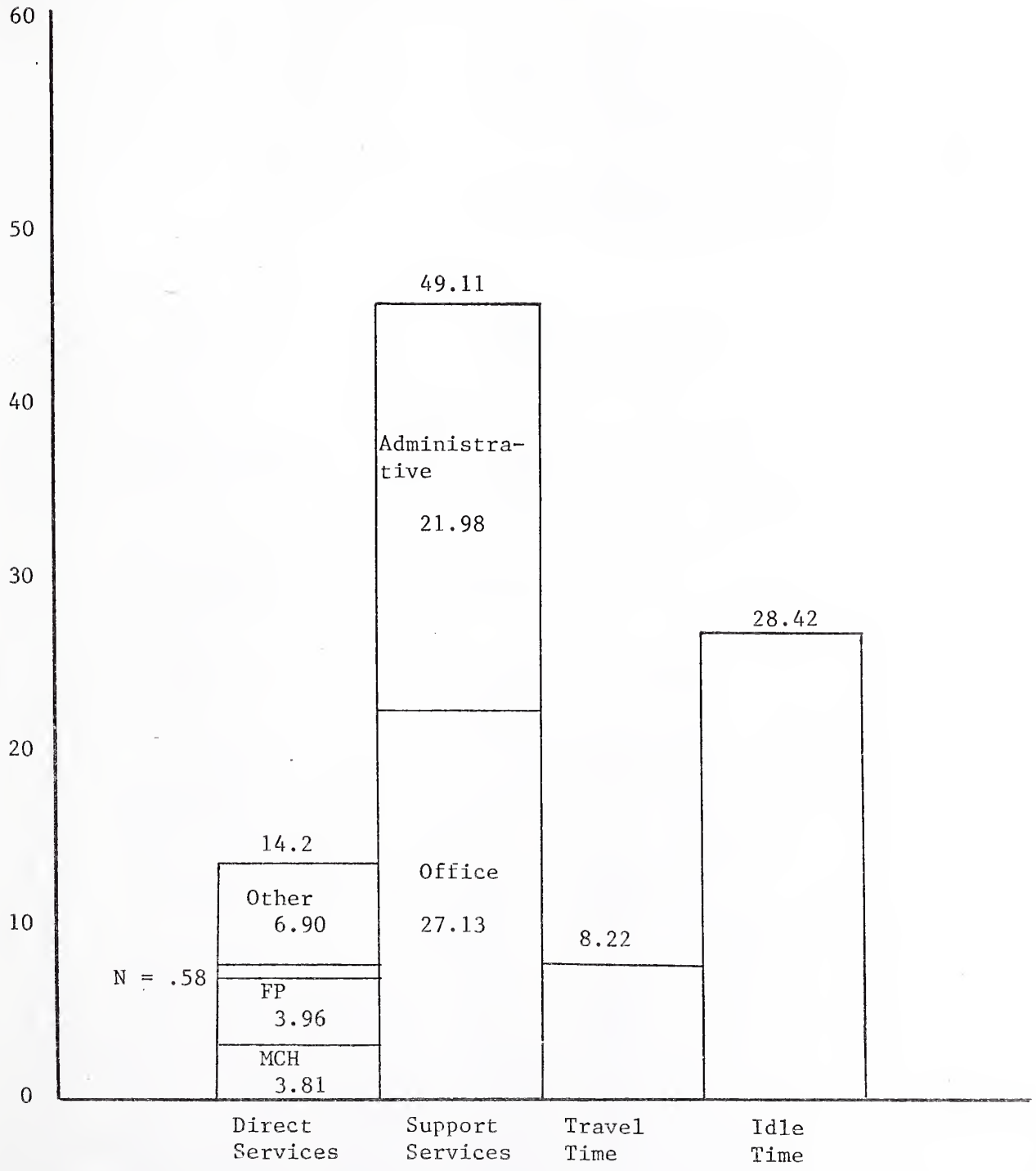
social/administrative duties), travel time, and idle time (including home visits) is shown in Figure 9 (58). Figure 10 is a breakdown of this general profile into separate ones for each type of facility. It can be seen from these two figures that nutrition is the least active of all direct services, and that major amounts of time are spent on activities other than the delivery of direct medical services. Figure 10 also demonstrates very clearly that based solely on the total amounts of time spent on direct services, supportive services, travel time, and personal/idle time, a midwifery center is undisputedly more efficient than a health center which in turn is more efficient than the district hospital. Also, office work consumes comparatively little staff time as the size of the facility decreases, while travel time and maternal/child health service time rise significantly. These results suggest that the ratio of direct service time to total staff time is small but that the ratio improves as the size of the facility decreases.

It was concluded that although there are no available standards for comparison, all health service units demonstrated an extremely poor ratio of direct service effort to total staff effort, spending much idle and support service time. Nutritional activity was almost nonexistent. Among the different types of facilities, the midwifery centers were by far the most productive.

Figure 9

Activity Profile of Health Service Units in Hang Chat District

by % Time Distribution (58)

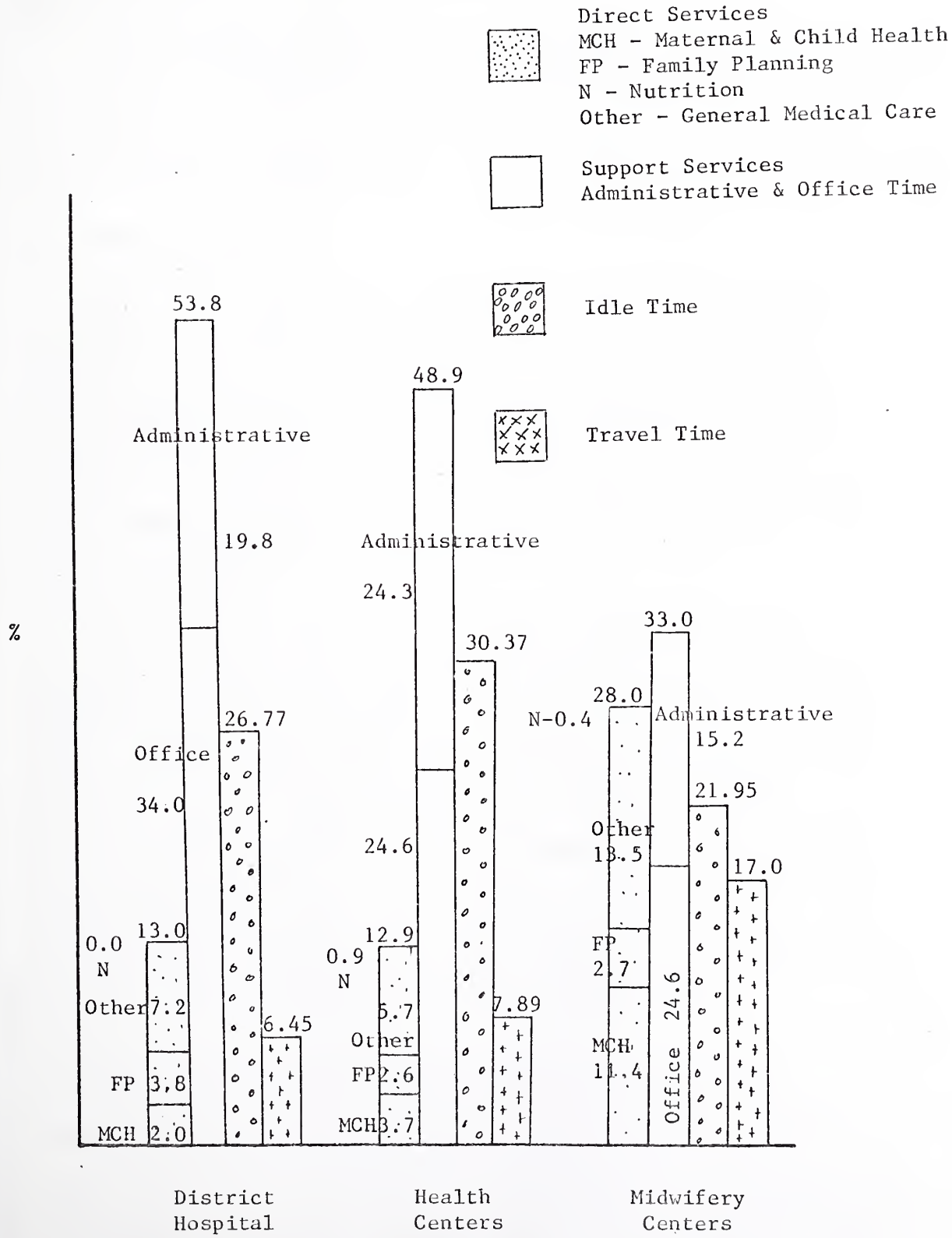


Note: MCH - Maternal and Child Health
N - Nutrition Services
FP - Family Planning
Other - General Medical Services

Figure 10

Health Care Activity Profile (% Time Distribution)

By Type Of Facility (58)



VIII. DATA

HEALTH FACILITIES

Table 17 lists the health facilities studied, their general characteristics, such as location and staffing, and specific aspects of each facility's jurisdiction.

HEALTH CENTERS

Each health center (HC) is a three or four room government facility, designed solely for out-patient services, and equipped with standard pharmaceutical supplies, basic diagnostic equipment (excluding oto-ophthalmoscope), a refrigerator, and instruments for minor surgery and deliveries. There are no laboratory facilities such as microscopes.

The typical HC staff consists of three or four personnel employed by the Thai government: a wechakorn, a midwife, a health worker (or junior sanitarian), and a nurse's aide. Each of these workers, in turn, supervises a number of village healthpost volunteers through regular visits to provide technical assistance, check record-keeping activities, and renew medical supplies. The village health communicators are also under the jurisdiction of the HC staff, although their interaction is usually social.

The Hang Chat District Health Officer acts directly as administrative and technical adviser to the HC staff. He visits each center every month in order to check records and supplies. It is important to note that in most cases the District Health Officer is a sanitarian with little medical knowledge and is therefore

Table 17

Statistics on Health Facilities Studied, Hang Chat District, 1980

Location (Tambon)	Facility	Staff							Volunteers			Villages	House-holds	Schools	Child Nutrition Center	Temples	Population				
																				Children	
		M.D.	Nurse	Midwife	Sanitarian	Nurse's Aide	Pract. Nurse	Dental Asst.	VHV's	VHC's	TBA's						Total	Male	Female	(0-6) years	(6-12) years
Health Centers																					
Viang Tan	Yangooy			1[2]	1	1			14	99	6	8	884	4	3	8	N.A.	N.A.	1,040	723	N.A.
Pong Yang Kok	Pong Yank Kok			1	1[1]	1			15	138	8	13	1,766	9	6	13	8,902	N.A.	N.A.	N.A.	1,232
Mae San	Mae San			1[1]	2				9	90[2]	0	7	720	5	0	5			N.A.		
Muang Yow	Muang Yow			2[1]		1			10	100[2]	4	10	N.A.	6	8	7			N.A.		
Midwifery Centers																					
Pong Yang Kok	Bankuang			1					5	37	4	5	484	2	1	N.A.	2,285	N.A.	N.A.	300[2]	400[2]
Viang Tan	Huai Rien			1		1			5	16	2	2	232	2	0	N.A.	N.A.	N.A.	N.A.	234	N.A.
Hang Chat	Mae How			1		1			3	33	2	3	680	1	1	N.A.	4,000[2]	N.A.	N.A.	300[2]	240
District Hospital																					
Hang Chat	Hang Chat	1	2	4[3]	0	0	5	1	6	60[2]	N.A.	6	1,196	N.A.	N.A.	N.A.	5,963	2,933	3,030	344[4]	1,225[5]

Source: Demographic information obtainer from each health facility. Previously collected by Provincial Health Office personnel.

Notes: N.A. - information not available from health personnel.

[1] Also trained wechakorns

[2] Approximate estimations

[3] One of these as a trained wechakorn

[4] Includes ages 0-4

[5] Includes ages 5-14

extremely limited in the amount of technical supervision he can offer.

The wechakorn, because of training, provides the bulk of curative and preventive care available at the HC. However, many of these duties, plus those related to administration and maintenance of the physical plant are shared by all members of the staff. When the wechakorn or midwife is away on home visits, it is the junior sanitarian or nurse's aide who must attend to all patients regardless of the medical problems. Oftentimes, this results in health workers performing services beyond their training, but the communication and sharing of information among staff members helps to alleviate discrepancies in treatment. In addition, the wechakorns perform duties they were priorly trained for. A wechakorn trained previously as a midwife continues to provide most of the maternal and child health services at a given health center, and a former sanitarian would continue to concentrate his efforts on environmental sanitation. The overall yearly budget of each health center, excluding personnel salaries, is 9,000 baht (US=$450); all drugs, equipment, and material expenditures must be provided for with this amount. Although medical services are generally free of charge, some patients are charged if it is felt that they can afford it. This supplemental income, referred to as a "donation", of approximately 10 baht (US=$.50) per injection or prescription is used to resupply pharmaceuticals. In spite of this, medicine is supplied at irregular intervals, and HC's frequently run out of common drugs such as penicillin and sulfa compounds.

MIDWIFERY CENTERS

The midwifery centers (MC) are the most peripheral government units in the health service hierarchy, since they are located at the village level and are usually responsible for less than five villages. The physical plant typically consists of a small two to three room building, equipped in the same manner as the HC.

The midwife, a government employee, is usually the sole member of the staff, although a nurse's aide may be present. As in the HC, the midwife is responsible for the group of VHV's, VHC's and TBA's located in the village within her jurisdiction, and visits them regularly to provide assistance.

The DHO is the official administrative and technical adviser, but the actual supervision differs strikingly depending upon the location of the MC. For example, the midwife at the Bankuang MC has received much technical support from the wechakorn at the nearby tambon HC, and has been able to expand the curative services she can provide. In contrast, the Mae How MC is located near the Hang Chat district hospital, and the physician there has restricted the midwife's services to those for which she has been trained.

The fifteen-month midwifery training course emphasizes maternal and child health care, including ante-natal, post natal, and delivery services, and general prevention and promotive care, such as family planning and well-child care. Marginal training in curative service is given, but because of their relative isolation in rural areas, midwives are expected by both villagers and

governmental superiors to provide curative services. Some midwives have had brief "retraining" sessions on curative care, and all have supplemented their knowledge by unorthodox means, such as reading the inserts in pharmaceutical supplies to determine their use.

The yearly budget of the MC is 7,000 baht (US=$350). All medication supplies and equipment are purchased with this sum, and as in HC's, supplemental income is provided by "donations.

DISTRICT HOSPITAL

The Hang Chat district (DH) hospital is an intermediate facility serving as a link between the peripherally located HC's and MC's and the provincial hospital. Recently converted from an HC to a district hospital with the arrival of a physician assigned by the Thai government, the hospital presently has a staff of thirteen; one physician, two nurses working primarily in ante-natal care and the dispensary, a wechakorn, two midwives, five licensed practical nurses, a dental assistant, and a secretary.

The physical plant includes a ten-bed inpatient ward, dispensary, central waiting room, small laboratory, out-patient examining rooms, a delivery room, an operating room equipped for surgery not requiring general anesthesia, and an emergency room. Given these facilities and staffing, the hospital provides a full range of inpatient and outpatient services. The physician, because of time restraints, provides only curative services, primarily at the in-patient level, and he relies on the nursing staff and midwives to provide most out-patient services. As medical director

of the DH, the physician also must perform some administrative duties related to the hospital and the HC's and MC's within the Hang Chat tambon.

The total yearly budget for the DH is 80,000 baht (US=$4,000) and all medications and equipment must be purchased with this budget and any income generated by fees for medicines. In contrast to the HC's and MC's, the DH usually has no problem obtaining adequate pharmaceutical supplies, because of its larger budget, and the important role it has been assigned by district and provincial administrators.

GENERAL SCHEDULE

Services regularly available at the HC's and MC's as determined by the Ministry of Public Health are as follows:

Monday AM - Well Child Care/Immunizations
PM - Home Visits
Tuesday AM - Family Health/Family Planning
PM - Home Visits
Wednesday AM - General Medical Clinic
PM - Home Visits
Thursday AM - Ante-natal Care Clinic
PM - Home Visits
Friday AM - School Health Clinic
PM - Record-keeping, general office and maintenance work

The HC or MC staff will make appointments for a clinic only for the specified day. However, if a villager requires medical attention, he or she is able to obtain it immediately. Home visits are sporadic and depend upon the number of newborns requiring check-ups and the number of villagers needing follow-up care for specific problems. School health clinics are conducted on an irregular basis, approximately once a week.

The schedule for the DH is approximately the same, except that sufficient staff members are available to hold clinics in the morning and afternoon, while others can go on home visits. Unlike the HC's and MC's, the DH also holds tuberculosis and dental clinics on a regular weekly basis.

PREVENTIVE AND PROMOTIVE SERVICES

The preventive/promotive services available for children at the health service units[9] are:

1.) Well-Child Care

2.) Home Visits

3.) Nutrition programs

4.) School Health

5.) General health education

6.) Dental Services

WELL-CHILD CARE

Well-baby clinics function primarily to administer immunizations; appointments are made to see children solely for this purpose until the age of six. After this, immunizations and general medical care are received through school health clinics.

Immunization schedules are generally uniform; variations result when an individual health worker departs from standard recommendations because of personal experience or specific suggestions from district or provincial health officers. Currently, the following immunizations are given: BCG to all infants at birth or within the first two months of life; DPT at either 3, 4 1/2, and 6 months or 3 and 4 1/2 months (when it is felt that two injections are adequate); DPT boosters at 1 1/2 years and prior to six years; and cholera and typhoid on an extremely irregular basis. It is recommended by the Ministry of Public Health that the latter two be administered once a year from ages 1-6. However, few health workers adhere to this guideline; some claim that the Provincial Health Officer has stated that the cholera vaccine is "rarely effective" and need not be given, and others feel that the local inflammation in children responding to the typhoid injection is a prominent "allergic reaction" and should be avoided by immunizing only children older than six. The smallpox vaccine is given where health workers have not been instructed to discontinue its use. Oral polio (OPV) and measles-munps-rubella (MMR) vaccines are currently not available at the HC's or MC's because of cost and problems with transportation and storage. Parents requesting either type of immunization are referred to the district or provincial hospital-based well-child clinics where OPV is free of charge and

the MMR is 300 baht (US=$15.).

During routine immunization appointments, health workers may perform other services related to well-child care such as nutrition surveillance, general screening, and health education, but these vary considerably at each health service unit. Emphasis on screening varies with the health worker's philosophy towards common diseases and problems. A lack of awareness of the significance of a particular disease or preventable problem is reflected in minimal attempts to screen for or treat that problem (such as nutritional deficiencies) or to emphasize basic health education and disease prevention.

For example, at the Yangooy HC, children are not routinely weighed, measured, or examined unless the child has a specific complaint or appears ill or malnourished. In the latter case, the wechakorn weighs the child, examines the conjunctivae for pallor and the mouth for vitamin deficiencies, elicits a brief history concerning feeding practices, instructs the mother in improving the child's nutrition using local foods, and gives appropriate food supplementation. On the other hand, the wechakorns at both Pong Yang Kok and Muang Yow HC's weigh all children seen at the Well-Baby Clinic, although only Muang Yow HC plots children's weights on appropriate weight-for-age graphs in order to determine if malnutrition actually exists. The reasons given for not plotting the weights at the Pong Yang Kok HC were that there "are usually no malnourished children anyway" and that in any case they have no food supplements.

At MC's, the amount of nutrition surveillance varies from routine weighings and assessment of all pre-school children to nothing at all, depending upon the midwife's interest in nutrition as a pediatric problem.

The health workers interviewed also explained that during each visit to the Well-Child Clinic, general health awareness is promoted. This includes information to parents concerning general care and feeding of infants, with uniform recommendations for breast-feeding and infant feeding schedules (See Appendix 4), potential reactions to immunizations, accident prevention, and environmental sanitation such as vector control, safe water supplies, and adequate waste disposal. Normal growth and development and routine care for minor injuries are not explained to parents.

The time allotted for each visit is approximately 8-10 minutes, during which the parents or guardians may ask questions relating to child care. Although there seems to be good rapport between health workers and parents, very few parents actually ask any questions, and workers rarely take the initiative in offering helpful information. In general, the staff members convey the feeling that they are accessible and the parents seem to be satisfied with this.

HOME VISITS

Well-Child care is also provided through home visits, geared primarily towards the newborn. The visits are officially scheduled four afternoons per week for health subcenters and twice weekly at

the district hospital, although they actually occur once or twice weekly.

At the time of delivery, if it is performed at a health service unit with a wechakorn or midwife in attendance, the newborn is examined briefly.

Particular attention is paid to the head, extremities, and heart, and the conjunctivae are instilled with silver nitrate, or tetracycline ointment. The newborn is kept with the mother for one night at the DH or at the HC, and at the MC providing the facility is equipped for it. If delivery occurs at home, assisted by a traditional birth attendant or relatives, the examination is performed during the first post natal visit by the wechakorn or midwife.

For several weeks following delivery, either of these health workers visits the mother and newborn. Schedules differ according to individual preference and are determined by past experience as well as time demands. The schedules observed vary from daily visits the first week followed by weekly visits up to five weeks of age or visits two to three times per week up to two months of age to a series of two visits sometime within the first six weeks. In each case, the guidelines are flexible, and each worker may adjust the number of home visits according to the progress and health status of both mother and infant and the accessibility of the health facility.

Most health workers use government-provided motorcycles to reach individual homes, traveling considerable distances over poor roads. The actual time spent in a patient's home, however, is brief, lasting approximately fifteen minutes. During this time the worker observes the mother and infant interactions and examines the infant briefly, or only if there are specific complaints on the part of the mother. The entire process is conducted while she is conversing with the mother, asking how the baby is feeding or sleeping. She also answers questions, instructs the mother on nursing and feeding practices, demonstrates how to bathe the infant, and treats problems requiring medical attention. Thus, these visits are an encouraging and instructive source of health promotion, performed in a setting familiar to mother and child.

NUTRITION PROGRAMS

The specific nutrition services emphasized at the tambon and district level are:

1.) Child Nutrition Centers

2.) Nutrition surveillance

3.) Food Supplementation Programs

4.) Nutrition Education

5.) Promotion of breast feeding

6.) Nutrition Clinic at District Hospital

Child Nutrition Centers

There are twenty-two child nutrition centers under the supervision of various health service units throughout the Hang Chat District. These centers are open-classroom day-care centers where pre-school children, ages two to six, are looked after and taught basic schooling and general health practices. They also serve as a type of "healthpost" providing nutrition surveillance and immunization. The nutrition aspect of the center consists of providing a balanced high-protein meal twice a week at the cost of 1 baht/meal (US=$.05).

The average number of children at each child nutrition center is 30-60, depending upon the season; conditions are crowded in the single classroom when peak numbers are present, for example, during planting and harvesting seasons. Typically, two young women manage the center: one, a government- salaried employee with a secondary school education; the second, an assistant whose salary is provided by the required monthly fee. This fee ranges from 10-25 baht per month (US=$.50-1.25); the larger fee is provided by the parents who can afford to subsidize others. Otherwise, needy children are unable to attend because of the expense; with only 5% of the pre-school population enrolled in child nutrition centers, there is a significant percentage beyond the reach of this service (59).

The centers are constructed by tambon communities with local funds. Unfortunately, there are few subsidies available to poorer communities, where functioning centers are needed most.

Nutrition Surveillance

Nutrition surveillance is rarely regular. Several points throughout the health care system where it is done sporadically include:

1.) Well-Child Clinics

2.) Child Nutrition Centers

3.) School Health

4.) Village Healthposts

As mentioned earlier, many wechakorns and midwives at the health subcenters weigh children routinely, rarely plotting results on appropriate weight-for- age charts for pre-schoolers, and never for children older than six, since available charts are designed only for ages 0-6. Many workers rely upon a quick scanning of the child's appearance to detect nutritional abnormalities. Contributing or precipitating factors of malnutrition are seldom investigated with the exceptions of an occasional stool culture for ova and parasites, or a trial of an anti-parasite drug. Even if a child presents repeatedly with recurrent infections, malnutrition is rarely considered a cause of lowered resistance to disease.

One of the more comprehensive methods, at least in principle, of nutrition surveillance is conducted at the level of the village healthpost, the operating unit of the village healthpost volunteer. Twice yearly, workers from the health service units meet with each of the VHV's under their supervision in order to weigh all of the pre-school children in the VHV's particular village. At the start of the LHDP, in 1974, a community survey of the Hang Chat district

demonstrated that as much as 55% of the pre-school population had some degree of malnutrition, using the criteria of weight-for-age against a Thai standard. Thus, a concerted effort was made to provide VHV's with adequate supervision and incentive to promote identification and follow-up of all cases. Recent follow-up studies on the incidence of malnutrition have been discouraging, and it is generally felt that VHV's are not fully cooperative. Another problem is that health workers do not provide active supervision of the VHV's. The net result is that little surveillance occurs at the level of the village healthpost, and that most VHV's do not maintain active records, referring all suspected or documented cases of malnutrition to the HC.

Food Supplementation

When a child is diagnosed as malnourished, health workers follow a schedule of evaluation, food supplementation, and follow-up until the child's weight returns to the normal range. The Provincial Health office is currently recommending that children with first-degree malnutrition be referred to the PH for admission or followed weekly, and those with second- or third-degree be followed monthly. This is the ideal situation; observation demonstrates various methods of evaluation and supplementation, and little routine follow-up.

Health workers state that on initial evaluation, they usually elicit a history of feeding practices. The workers then attempt to educate the parent on the importance of breast-feeding, the use of local resources, and appropriate food preparation. In some cases,

food supplements are given immediately; in others, parents are encouraged to use family foods. Supplements consist of skim milk powder, and soybean infant food, biscuits, and cookies, all given to parents free of charge when available.

The major difficulty with this procedure is that health subcenters are frequently out of supplements; they are irregularly distributed or available at the district or provincial health office, and the prevalence of insects in subcenters makes prolonged storage difficult. Parents see little reason for follow-up visits if there are no food supplements to be obtained, and health workers find it difficult to schedule home visits to children who fail to return.

Nutrition Education

In addition to the nutrition education given during well-baby clinics, and for specific cases of malnutrition, instruction is also available in the context of curative care since the general clinic is where parents and children are seen most often. During treatment for a specific medical problem the health worker may discuss briefly ways to improve a child's diet. Screening for nutritional deficiencies also occurs during general clinic visits, since this is when the health workers may notice specific signs of nutritional problems. Breast feeding is routinely promoted by health workers during encounters with pregnant women and in the context of well-baby clinics.

Nutrition Clinics

The District Hospital holds a nutrition clinic weekly; a midwife travels to designated villages two or three days earlier and encourages parents to attend with their children. On the clinic day, pre-school children are weighed and measured, and the results plotted. The malnourished are given food supplements and instructed to return monthly for follow-up. Records are kept of children requiring treatment, and the midwife visits those who fail to return.

Open-Ended Issues

There are discrepancies between the nutrition activities which health workers claim to provide, and what was actually observed. An attempt was made through a series of open-ended questions to understand why this is the case.

Most health workers feel that malnutrition is a major problem attributed to incorrect feeding practices, and adherence to traditional beliefs such as witholding protein from young children and pregnant women, and limiting the food intake of sick children. These are felt to result from a lack of education of parents and guardians who are "bored with education" and "tired of supplements."

The staff at one health center state, however, that there is no malnutrition in their community and see no reason to weigh children, plot weights regularly, or stock food supplements. It was also indicated in interviews with health workers that there is no attempt to encourage parents to take an active part in the growth progress

of their child. They do not assist in weighing or measuring, or keep a copy of the growth chart. It is important to emphasize that the inefficient administration, as described earlier, is translated into difficulties with food supplementation stocks. The Provincial Health Office does not provide regular supplies to the District Health Offices which in turn cannot supply the health subcenters.

SCHOOL HEALTH

Primary school health visits (grades 1-6) are conducted one morning weekly by the wechakorn and an assistant health worker from each HC, the midwife at each MC, and six public health nurses and the dental assistant from the DHO and DH. Each class within a school is visited approximately twice yearly.

During visits, children are given a cursory physical examination emphasizing the scalp, ears, eyes, mouth, teeth, and general hygiene. Dental services form the main emphasis of school health program provided by the DH; the presence of a full time dental assistant makes this possible. Nutrition surveillance, consisting of twice yearly weighings, and eye exams are the responsibility of teachers.

Typhoid and cholera immunizations are given during school health visits. Health workers will also occasionally talk on general health education, personal hygiene, and the prevention of specific diseases.

HEALTH EDUCATION

In addition to health education imparted through well-baby clinics, child nutrition centers, home visits, and school health, there is some provided in the context of general clinic.

In the course of curative care, which forms the overwhelming majority of pediatric visits to health facilities, health workers may take the opportunity to advise parents on preventive care. For example, they might emphasize the importance of basic hygiene, or the necessity of sleeping under mosquito nets. This is done in the course of treating a child for a medical problem, and it forms the major thrust of general education for disease prevention and health promotion.

In spite of this fragmented system of prevention and education, programs designed to teach preventive measures to large numbers of children or parents do not exist. Health providers by and large seem to understand the importance of prevention and health promotion, but the rural population seeks primarily curative services since these provide the quickest and most readily apparent results.

DENTAL SERVICES

Dental services are available at the Yangooy HC and the midwifery centers only through the yearly visits of the Mobile Unit from the Community Health Department of the provincial hospital. The wechakorns at the Pong Yang Kok and Muang Yow HC's have received special dental training and can extract, fill cavities, and treat

periodontal disease. As mentioned, the DH is staffed with a dental assistant who has completed a two year training course. Through the regular dental clinic, a full spectrum of dental services are available. Very little preventive work is done by any of the health workers.

CURATIVE CARE

Curative care is the out-patient service most often sought by parents for their children and one area where health workers feel that they have the greatest effect. In the HC's, MC's and DH, the wechakorns and midwives are primarily responsible for administering routine curative care, although all staff members participate, often in joint effort, especially when wechakorns and midwives are away from the facility on home visits. At the DH, the physician is available only if needed.

On the average, three to five children are seen at each health subcenter daily for a wide variety of complaints. Most children arrive on foot or via motorcycle with one parent and are seen by a member of the staff immediately, as there is rarely more than one or two patients at the subcenter at any one time. The clinic at the DH sees a much larger volume of patients.

The standard procedure for a visit consists of recording the patient's name, age, sex, and chief complaint, eliciting a brief history--usually one or two questions about the present illness. A physical examination is then done; this entails a cursory examination of the system or part of body in question. For example,

in a child presenting with diarrhea, the abdomen is percussed and palpated. Routine vital signs are not taken unless fever is one of the chief complaints. Treatment is given by performing some minor first-aid procedure such as suturing or dressing wounds or giving medication, either orally or via injection.

Verbal exchanges during a clinic visit center around instructions about the administration of medications, and follow-up, and occasionally patient or parent education about the medical problem.

Follow-up care is sporadic; parents are instructed to return to the clinic within a few days, but most return only if there is no improvement in the child's condition. Some attempt is made by health workers to visit patients in the course of home visits, although this service is of low priority.

Table 18 is a composite of the pediatric (age 0-18) cases seen at the three HC's and three MC's visited during the two week period preceding observation; this information has been obtained from records kept at each facility.

It is difficult to discern a pattern in the approach to diagnosis and treatment for a specific complaint; interviews with health workers and observation reveal that they do not follow routine protocol. Wechakorns, in the course of their training at the LHDP, use and receive a training manual consisting of algorithms for the diagnosis and treatment of diseases commonly seen. Wechakorns state that they rarely have the time to consult these

Table 18

Numbers and Diagnoses of Children (Ages 0-18) Seen in Two-Week Period at Health Centers and Midwifery Centers Studied

Diagnosis	Age <1	Age 1-4	Age >4	Total
GI. Complaints- inc. diarrhea/stomachache	3[a]	1	5	9
Well-Child-Care (immunization and food supplementation)	10	5	3[b]	18
Upper Respiratory Infection (inc. cough, sore throat, tonsillitis		9[c]	16	25
Fever	1	1	6[d]	8
Trauma		3	16[e]	19
Weakness/Dizziness		1	1	2
Impetigo		2	1	3
Otitis Media			1	1
Family Planning			1	1
Ante-Natal Care			1	1
Vaginitis			1	1
Conjunctivitis	—	—	1	1
TOTALS	14	22	53	89

[a]One referred to Provincial Hospital because of diarrhea-related dehydration

[b]Cholera vaccines

[c]One case seen in clinic for follow-up

[d]One referred to Provincial Hospital because of suspected hemorrhagic fever

[e]Gunshot wound—referred to Provincial Hospital

modules, but rely instead on memory. In addition, midwives have not had any significant training in curative care, and must rely on knowledge acquired through trial and error.

As a result, clinical decisions are based on the brief history and physical examination. Facilities for routine laboratory tests are available only at the DH, and blood samples or cultures are rarely obtained at the HC's and MC's for transport to the DH or PH. For example, although health workers know how to obtain stool samples, and use transport media, the Communicable Diseases Unit at the PHO, responsible for the regular collection of samples from health service units picks up samples infrequently. The health workers receive the results of these cultures several weeks later, a practice which is of no help in determining the etiology of a case of diarrhea. Thus, treatment is given according to subjective symptoms and clinical impressions, with little attention given to the pathophysiologic processes. Also of note is that medication shortages frequently necessitate giving alternate and less desirable drugs.

In order to demonstrate more clearly the quality of curative care, the modes of diagnosis and treatment for one specific problem, diarrhea, will be discussed.

Diarrhea is treated in several ways depending upon the history, severity and presence of associated symptoms.[10] For example, diarrhea in an infant caused by suspected dietary changes is treated with a kaolin mixture, and recommendations concerning appropriate diet are given. If parents deny boiling drinking water, or if there

is nothing in the history to exclude an infectious etiology, kaolin and an antibiotic are given. The chosen drug depends upon the personal preference of the health worker. That is, at Yangooy HC, sulfaguanidine is prescribed for "minor" diarrhea and trimethoprim-sulfamethoxazole for "serious cases", because the wechakorn there has only a small supply of trimethoprim-sulfamethoxazole and "saves it for serious cases". Severity is determined by the frequency and presence of blood in the stools. At the Pong Yang Kok health center, diarrhea is treated with kaopectate and sulfaguanidine; if blood is present, trimethoprim-sulfamethoxazole is added to the regimen. The rationale for this is that while "sulfaguanidine gives quick relief, the trimethoprim- sulfamethoxazole takes care of the infection". At Muang Yow HC, Lomotil and sulfaguanidine are given and tetracycline added in the presence of fever. Chloramphenicol is routinely given for all types of diarrhea, especially if associated abdominal pain causes a suspicion of amebic dysentery. Oral Rehydration Solution packets and intravenous rehydration are also available. Children less than one year of age with significant dehydration are referred to the district or provincial hospitals for management of fluid status.

District Hospital

In addition to the general medical clinic which is identical to that of the health subcenters, the DH has two other means for providing curative care: the mobile unit, which travels to out-lying subcenters twice a month to provide strictly curative

services, and the in-patient unit, a 10-bed ward. The in-patient unit, usually filled to capacity is the primary responsibility of of the physician; patients are admitted from outlying subcenters and the out-patient clinic at the hospital itself, as well as those recovering from surgery, such as appendectomies,and tubal ligations.

A full range of pharmaceutical supplies is available at the DH, but the laboratory facilities are limited; complete blood counts, microscopic and macroscopic urinalyses, and malaria blood smear examinations can be done.

Referrals

Medical problems requiring in-patient treatment, such as suspected cases of encephalitis, dengue hemorrhagic fever, tuberculosis, anemia, malaria, or anything requiring further work-up, plus trauma cases, such as fractures or serious lacerations are referred to the district or provincial hospitals. The system is designed such that patients are encouraged to seek help initially at the intermediate level district hospital, then at the provincial hospital. However, most people in the Hang Chat district prefer to go directly to the PH, since public transportation there is more easily obtained and people feel they will get better medical care.

Medication Supplies

At the beginning of the fiscal year, each health service unit staff requests from a specified list the number and types of medications needed. Available drugs include standard pharmaceuticals, patent medicines, vitamins, and mixtures, most

produced by the Thai government. (Appendix 5) The method of dispensing these drugs from the district provincial health office is sporadic; some facilities receive the entire yearly shipment at once, while others are on a more irregular schedule of delivery.

Open-ended Issues

The main pediatric problems requiring curative care identified by health workers are diarrhea and dental caries. Contributing factors are thought to be incorrect nutrition, parental neglect, and lack of education. Health workers also state that villagers hinder attempts to provide adequate medical care by consulting traditional healers first and government health facilities only when the disease process has advanced and by heeding traditional doctors' advice to discontinue medications prescribed at the HC's or MC's. Workers are still of the opinion, though, that the immediate results of modern medicine are causing a shift away from the traditional herbalists and spirit-doctors.

MATERNAL SERVICES

Services for women of child-bearing age include:

1.) Family planning

2.) Ante-natal care

3.) Delivery attendance

4.) Post-partum care

5.) Referral system for obstetrical complications

Family Planning

A full range of family planning services are available on a regular basis through the Family Planning Clinics. Methods include oral contraceptive pills (OCP), intra-uterine devices (IUD), condoms, and depoprovera injections. Midwives are not trained to insert IUD's, but most dispense the remaining types. Social traditions also dictate that married men and women are the sole users of government facilities for birth control.

Oral contraceptive acceptors are initially screened for medical problems such as hypertension, jaundice, breast masses, menstrual irregularities, dyspnea, albuminuria or frequent headaches, and if none of these conditions is present, they receive the first cycle from the health worker for a nominal fee. Women are encouraged to buy further supplies from the local VHV's. There is no routine follow-up of women taking OCP's, and acceptors are instructed to return to the clinic only for specific complaints. Condoms are available free of charge. Wechakorns have also been trained to insert IUD's, and both wechakorns and midwives give depoprovera injections. People desiring vasectomies or tubal ligations are referred to the DH or PH; the mobile unit team from the Community Health Department at the PH also performs vasectomies. Education and information on family planning are usually given in the course of routine visits, although some of the wechakorns and midwives try to hold regular meetings encouraging family planning and describing available methods.

Ante-Natal Care

Recommendations concerning the schedule of ante-natal visits vary according to the wechakorn and midwifery training, clinic census, and time demands. Schedules range from seeing pregnant women monthly from the second trimester of gestation to delivery to once a month from 3-5 months, twice a month at 6-7 months, and once a week after this until delivery. Pregnant women tend to miss more appointments towards time of delivery because of transportation problems.

The initial prenatal visit consists of eliciting an obstetrical history and examination and obtaining the weight, blood pressure, hemoglobin level, and a urinalysis. All, except the hemoglobin, are repeated at intervals during subsequent visits. Some midwives prefer to send primigravidas to the PH, in order that they will have "more thorough physical examinations" and VDRL tests. The DH staff also obtains blood samples on all pregnant women for the VDRL; most health subcenters do not, primarily for economic reasons. Two tetanus toxoid injections are given, preferably one month apart. Most women receive one injection, since they tend not to return to clinic in time to receive the second injection before delivery.

At health subcenters, multivitamins, ferrous sulfate, and cod liver oil pills are routinely given to pregnant women, except when shortages necessitate giving them only to those undernourished or anemic, a phenomenon occurring frequently. Health workers at the DH prescribe ferrous sulfate to all pregnant women regardless of nutritional status.

At the first sign of abnormality, during the first and second trimester, pregnant women are requested to return to clinic more often. If complications occur during the last trimester, or persist after several return visits, the woman is referred immediately to the DH or PH. Most women chose to go directly to the larger and more prestigious PH.

Wechakorns and midwives promote maternal health primarily by encouraging a proper balanced diet. This is done to discourage the Thai custom of restricting caloric intake, especially protein, during the pre- and post- natal period. Women are also encouraged to breast feed their infants.

Reliable figures are difficult to obtain concerning numbers and percentages of pregnant women attending the local health subcenters. Some workers have estimated percentages from as high as 100% to as little as 30-40%. In the latter case, the majority seek care instead from the district or provincial hospital-based clinics.

Delivery Attendance

Although workers at the health subcenters claim to see significant numbers of pregnant women through ante-natal clinics, only a small portion of these women are actually delivered by the wechakorns and midwives. The main reason is that health workers are available only during weekdays, and many women must rely on the traditional birth attendant (TBA), or "granny midwife," friends, and relatives if the delivery is at any other time. In addition, the MC's are not equipped adequately and midwives must make a home visit

to assist in deliveries. Increasing numbers are also choosing to deliver at the DH or PH, where a physician is attending, and where complications can be managed immediately. Some women still prefer the assistance of traditional birth attendants.

Post-Partum Care

Routine post-partum care is done on a very limited basis and only in the context of home visits. During these visits, a physical examination is done only if the mother has a specific complaint.

COMMUNITY HEALTH DEPARTMENT

As mentioned previously, the Community Health Department (CHD) at the Lampang Provincial Hospital provides a variety of services available at the PH out- patient department and in out-lying rural areas. The main philosophy is not to duplicate services available throughout the system, but instead to "fill the gaps" by providing services previously unavailable and the technical support to coordinate already existing activities.

At the PH itself, the CHD is coordinating an impressive array of hospital based clinics for the pediatric population, such as nutrition clinics, well- baby and immunization clinics, health education programs for parents in both in-patient wards and out-patient clinics, and the community-based school health program. These are all well-staffed and very well attended, but the population seeking assistance at the PH comes predominantly from the Lampang City community and the surrounding area.

The services routinely extended to the rural areas are much more narrow in scope and consist of a limited system of referrals from rural areas for medical and nutritional problems, the mobile unit, technical supervision to rural subcenters, and a short wave radio communication network between nineteen of the most peripheral health centers and the PH.

The mobile unit, originally a mobile vasectomy service, has been expanded to provide a wide variety of promotive, preventive, and curative services. Currently, the mobile unit makes bi-weekly trips to outlying health centers with a core team consisting of a physician, a dentist, wechakorns, and nurses. At each HC, a variety of services are provided for the entire day. For example, the physician will perform several vasectomies, the dentist examines and treats classes of school children, and the wechakorns set up a medical clinic, complete with dispensary. Usually, several hundred patients are seen in one day for problems the local health workers can easily treat. But the occasion is primarily a social gathering, and the one opportunity many villagers have of being seen by the physician. The doctor may also give a short health education talk concerning a major health problem, such as a preventable disease. The mobile unit is no longer engaged in child health/nutrition/immunization activities; local health workers are encouraged to provide these services rather than rely on the yearly visit of the mobile team.

Another role of the mobile team is that of technical supervision of the health- center based wechakorns. In reality, the mobile unit arrives, sets up various operating units within the HC, and goes to work, leaving the staff of the HC to observe, benefiting little from what is occurring.

The short wave radio medical services to nineteen out-lying rural health centers throughout the Lampang province is another rural-based service of the CHD. The nineteen HC's are equipped with radio systems by which they can communicate directly with the PH and with each other. A nurse, with physician-backup is available to answer all calls, and a physician is available at night. For major problems in diagnosis, the wechakorn radios another health center or the provincial hospital, where she receives a prompt reply and recommendations for treatment or referral.

ANCILLARY SERVICES

Community Development

Although participation in community development activities is not a direct responsibility of the health workers at the HC's, MC's and DH, most of the wechakorns and midwives are involved to some extent, usually as members of either the village or tambon community councils. The councils are comprised of selected individuals such as the village or tambon "headmen", or leader, teachers, head monks, and certain villagers. Meetings are held regularly once monthly, and topics such as administrative and community development projects (irrigation systems, road repairs, sanitation improvement

installations) are discussed. Occasionally, the wechakorn or midwife is requested to speak on health concerns of the community. such as the prevention of epidemic diseases, immunizations, and the need for child nutrition centers.

Environmental Sanitation

The areas of sanitation and environmental control being addressed by health workers include:

1.) Adequate safe water supplies and the installation of polyvinylchloride (PVC) hand-pumps on wells
2.) Building water-sealed latrines
3.) Adequate refuse disposal
4.) Vector control

The importance of sanitation and environmental control is frequently communicated by health workers in the course of providing routine health care. That is, workers stress the need to boil drinking water, dispose of human excreta and garbage safely, house farm animals at a considerable distance from the house, and avoid creating areas suitable for breeding mosquitoes. Sanitarians staffing HC's and the District Health Office provide technical assistance to villages building and improving wells, and constructing latrines. An insecticide powder, Abate-SG is also available free of charge at all health service units. A special project being undertaken by the LHDP involves the installation by villagers of PVC hand-pumps to all suitably built wells throughout designated tambons.

In spite of the activities conducted, actual services provided vary considerably among the health service units and depend upon the individual worker's perceived need for improvement in environmental conditions. The services that are available are extremely fragmented and lacking in sufficient planning.

ACTIVITIES OF VILLAGE HEALTHPOST VOLUNTEERS

Of the five VHV's interviewed, four are male rice farmers and one is a female seamstress and shopowner. In addition to their full-time occupations and part-time positions as health volunteers, two have private practices as injectionists.

The group of village healthpost volunteers interviewed demonstrate much variability in the number of services they provide. Some are very active in their villages, treating most illnesses such as minor trauma, diarrhea, and respiratory infections, dispensing oral contraceptives, and talking with individuals about health care and disease prevention. Some of these workers actually see more individuals in a month than the local health centers do; others do next to nothing. All of the volunteers state that their role in the community is to "treat illness", and none emphasize the importance of disease prevention.

The only preventive service delivered to any extent concerns nutrition surveillance. Twice yearly, the wechakorns organize a systematic weighing of all children and the VHV's assist in this procedure. In most cases, this does occur, although some of the VHV's report that they have not seen wechakorns from the HC in more

than a year.

All VHV's work interdependently with other health workers; their supervisers are the wechakorns of the tambon HC's and the midwives at the MC's who visit the VHV's monthly to review records, renew medication supplies, and provide any technical assistance the VHV's may require. The HC serves as the major point of referral for those who require more than simple first aid or treatment with basic household drugs.

Most of the wechakorns supervising the VHV's interviewed visit once a month; however, this is more a social visit than a professional one, and VHV's frequently have difficulties replenishing supplies, such as aspirin, cough syrup, and antibiotics. Thus, the supplies at each of the healthposts vary considerably, and many volunteers will provide their own supplies, especially if they know that the villagers are willing to pay a modest fee for the services provided.

Most of the VHV's demonstrate an understanding of community problems, such as the need for child nutrition centers, the constraint that a lack of education has on the level of socio-economic development, and the major health problems confronting the rural pediatric population. However, most of the VHV's still feel that their primary role is to provide curative services and not to emphasize the importance of health promotion and disease prevention; to this end, they would like to have further training in curative services as part of the VHV curriculum.

ATTITUDES OF HEALTH PERSONNEL

A series of open-ended questions facilitated discussion and provided greater understanding of what are considered to be the major roles of health personnel, health problems of villagers, and impediments to the effective delivery of health care.

For the most part, health personnel are fairly young, very friendly, and willing to converse. They express a sense of enjoyment and confidence about their work and state that most villagers respect their capabilities and are pleased by their presence as health workers. The workers view their role as providers of general health care, although they are sought mainly for curative and family planning services.

Wechakorns claim that prior to their training, they were expected to "act like doctors" and when they could not because of a lack of knowledge, their services were utilized less frequently. Following recent training, they have noticed an increase in the demand for all services. However, one wechakorn emphasized that limited training combined with high expectations of and tentative trust by the rural population puts them in a precarious position. This wechakorn was speaking from experience, since one month before, he extracted the tooth of a child who later developed viral encephalitis; the parents were so convinced that the two events were causally related, that he was forced to pay the family a large sum of money.

A common complaint continues to be the underutilization of available services. The explanation most often cited is that the rural people seldom respect the geographic boundaries of health facilities, preferring to go to the place that suits their liking and mode of transportation. With a major highway accessible to most tambons in the Hang Chat district, many by-pass the local and intermediate facilities to use the provincial hospital, where they may possibly be seen by a physician. Those who can afford it prefer to see a private physician, who is more likely to provide personalized and courteous service. Others prefer traditional healers and attend government facilities only if the herbalist or "spirit-doctor" fails or if they want a more rapid response to treatment. Little attempt is made to acknowledge aspects of traditional medicine, and all personnel admit the difficulty of changing attitudes towards customs. In particular, the physician at the DH, Pichai Tansuppon, takes a dim view of attempts to promote health prevention given the lack of community resources and education and the populace's subsequent adherence to tradition.

Most workers claim that their interaction with volunteers consists of monthly visits to check records and resupply drugs, and twice yearly to weigh children at each village with the VHV. There is no formal contact with VHC's and TBA's. Many workers feel that volunteers are only capable of "giving out pills (OCP's) and spreading health information", although some would like them to take more responsibility in those areas for which they have been trained. It is apparent though, that rural workers do not consider the VHV an essential link in the primary health care system.

The lack of retraining or additional training programs and an organized system of technical or administrative supervision are major problems identified universally by health workers, and many feel that these are frequently determinants of poorer quality medical care. As mentioned, the district and provincial health offices, though directly administered by the Ministry of the Interior, are responsible, in turn, for the administrative supervision of the rural health subcenters. Technical supervision is theoretically the responsibility of the physician at the district hospital. These two points are where the system has broken down. That is, the administrative supervision is almost non-existent, and most health workers complain that they have difficulties obtaining equipment and pharmaceutical supplies. In addition, the physician at the district hospital has neither provided meaningful technical supervision for peripheral personnel nor supported their requests for further training. This neglect of responsibility has created the situation where health workers at HC's and MC's often feel that they are operating in almost total isolation, doing the best they can with what they have available.

IX. DISCUSSION

GENERAL

It is evident, in the preceding data, that there is a gap between the theory and programs devised at the central level of administration and the implementation at the rural level of the Hang Chat district. The actual practice, available services, and standards of quality are quite different from what one would expect given a knowledge and understanding of stated government priorities and programs.

At the rural level, there are several issues which appear to contribute to the lack of effective implementation: inadequate material support, inconsistencies in training and supervision of auxiliary health workers, and misperceptions of policy priorities by local workers. These elements create a situation where health workers are not able to work under optimal conditions or provide adequate medical care, and are due in part to bureaucratic inefficiencies at the provincial and district level. Additional areas determining actual practices are the awareness of health issues by the population, community participation, and the utilization of health services; low levels of education, poor socio-economic status, and limited community resources are all responsible.

Training and Support of Auxiliary Workers

In addressing the problem of health manpower shortage, the Lampang Health Development Project has made special efforts to train auxiliary health personnel. The workers trained, such as wechakorns, VHV's, VHC's and TBA's have made available a wider spectrum of services, most notably curative, at the tambon health center and village level. In talking with and observing these workers, it is obvious that through participation in the Lampang project they have been able to expand their capabilities as health providers, and many state that since their training, they have noticed an increase in the number of individuals seeking their services.

There are numerous problems with the training and employment of these workers, related to training and curriculum inconsistencies, and material support. Efforts to improve this situation are hampered by a general dearth of knowledge concerning what these auxiliary workers are actually doing at their work sites. Observation demonstrates that auxiliary workers, with the exception of midwives, deliver curative and preventive services close to the level of competency expected as a result of their training. For most medical problems encountered at the tambon level, wechakorns are able to provide a full spectrum of services and treat most conditions which otherwise would have been treated by the physicians at the district or provincial level. The village healthpost volunteers are capable, when they are available, of treating simple conditions with household drugs and dispensing oral contraceptives. Midwives who are not given further training under the auspices of the Lampang Project are also expected by both the community and

higher-level administrators to provided a full range of services. What training they have acquired has focused mainly on maternal and child health care.

There are many problems not readily acknowledged by provincial administrators but apparent with observation and discussion. These preclude the smooth delivery of care of an acceptable quality and scope by health auxiliaries. For example, medication and equipment shortages were frequently observed at health sub-centers. Health workers are required, as a result, to use inappropriate drugs in the treatment of particular illnesses. The supplies most often out of stock are essential antibiotics, such as penicillin and sulfa compounds. Facilities frequently have neither immunization supplies nor food supplements. To make the situation worse, when shortages do occur, health personnel have no leverage in demanding supplies; instead, they must wait for shipments to arrive at the arbitrary times set by the district and provincial health offices. If the yearly budget has already been exhausted, they must raise funds from "donations" for other drugs dispensed or make do until the next fiscal year. Laboratory support systems are also inadequate, with irregular pick-up of samples and long delays in the receipt of results.

VHV's also experience problems with supplies; they depend upon the wechakorns and midwives for material support, and it is ironic that in as much as the wechakorns and midwives complain about their lack of an adequate supply system, they do little to supply the same to the volunteers for whom they are responsible.

Administrative supervision is inadequate, and varies among facilities depending upon the orientation of the particular administrator; for health and midwifery centers, the district health officer or the district hospital physician is the superviser, and for the village volunteer, the wechakorn or midwife of a particular sub-center. The result of this variability is striking, for example, at the midwifery centers visited. Two midwives have been encouraged to provide a full range of medical and health services, while the third midwife has had such severe restrictions placed on her activities by the district hospital physician that the center serves as little more than a referral station. VHV's, VHC's and TBA's also receive no administrative support to speak of, and wechakorns and midwives usually maintain only social contacts with the volunteers under their supervision. As a result, much of the potential of these volunteer workers is untapped.

Inconsistencies in the training of auxiliary health workers have been acknowledged by the Lampang project, and problems with the application of this training are readily observed. For example, in diagnosing and treating medical complaints, wechakorns do not use the manuals given them as part of their training. These manuals contain information essential in treating common diseases, since the wechakorn's training is intentionally without emphasis, because of fiscal and time constraints, on an understanding of disease processes. Wechakorns, however, rely on memory instead, a practice which leads to errors in diagnosis, and a gradual narrowing of the treatment options considered for a particular complaint.

Beyond the level of initial training are technical supervision and retraining programs, and the total lack of these is expressed by all workers. They state that they feel isolated from avenues facilitating a maintenance or improvement in their level of competency. The result of this, a decline in quality of care is most evident when workers are sufficiently removed from the period of their initial training.

Rural health workers and administrators also demonstrate a limited awareness of appropriately ordered priorities. For example, curative services are most often sought by rural people, and health workers do not discourage this demand. Thus, even though workers may state that without prevention of disease and promotion of health, the need for curative services will only escalate, at the level of interaction between patient and provider, curative medical services still receive the highest priority. Workers openly acknowledge this conflict between what they should deliver and what they prefer to provide in order to maintain their credibility.

It was also found however, that some health workers did not see the importance of health prevention, and thus made no attempt to provide services such as nutrition or school health. Others recognized its importance, but had such a sense of futility about the lack of awareness of the populace, that they literally had given up attempts to do more than cure illness and deliver babies.

In the end, the demands of the population, coupled with a reticence on the part of health workers to provide the needed preventive and health education services determine the practice.

The result is that while the government is reinforcing the importance of health promotion and disease prevention, rural health workers are making few attempts to do more than add a few tips on health education in the course of providing curative care.

At the provincial level of the rural health system, it was also noted that there continues to be a major emphasis on western oriented "big-hospital" medicine. The Lampang Provincial Hospital is a prime example of this, as it is currently undergoing expansion to become a 400-bed regional (several provinces) referral center. This is especially ironic when one considers that the Lampang province is the site of the most comprehensive of the rural health development projects in Thailand, and when one travels to the peripheral areas to see just how inadequately the rural health sub-centers are equipped.

Awareness of the Population

The extent of health awareness by the rural population is a major determinant of the gap between planning efforts and implementation. The interaction between this and the priorities maintained by health workers determines to some extent whether or not health services are available and acceptable to and therefore utilized by the general population.

As mentioned, the rural people determine to some extent the services provided, and those that they demand do, in fact, form the bulk of what is practiced. In the rural areas of Lampang, it appears that people have not received sufficient education to

pro ide them with an appreciation of the need for health prevention and disease promotion. For example, villagers were observed only rarely requesting such information and services. Thus, the major responsibility placed on the health workers is to provide the curative services demanded, but yet at the same time to encourage an appreciation of the preventive and promotive aspects of medicine. This attracts the local people to the health facility, and makes it possible for government workers then to provide services other than direct medical care.

Significant progress remains to be made in this area by health personnel, who were observed to spend little time in contact with patients. The little time that was allotted was often characterized by the lack of a friendly and personal element. It appeared at times that the quality of care provided was adversely affected by this unwillingness to spend an adequate time with patients. What constitutes adequate time is difficult to say, and most health workers feel that they do give their patients more than enough. It is possible that the competency of a health worker is judged by the amount of time it takes to make a diagnosis; villagers may feel more confident when their problem is handled rapidly. However, considering the low volume of patients seen in a day at sub-centers, it is difficult to understand this approach.

Utilization of Facilities

The low level of utilization of health facilities is a major problem and accounts in part for the limited population coverage and the difficulties involved in the implementation of specific

programs. At the more peripheral levels of the health system, such as the midwifery and health centers, underutilization is very noticeable; rarely are there more than one or two patients waiting to be seen at any one time. The provincial hospital regularly sees larger volumes of patients, many traveling long distances to be seen by a physician.

Health workers suggest several reasons why the peripheral facilities are so poorly used. A major factor is that there are no physicians at the midwifery and health centers, and that most of the rural population still feel that a physician is the only person who can cure their health problems, no matter how minor. Additional reasons include: a preference of some for traditional healers, or private physicians if they can afford it; the frequent lack of pharmaceutical supplies at sub-centers; and the lack of economic means which necessitates seeking help from friends and relatives. Another major reason, though one rarely acknowledged by health workers, is that many of the workers do not provide service in a friendly, concerned, sensitive manner. Patients and parents appear satisfied, but on observation there is no real sense that a lasting or meaningful rapport has been established.

The morale of workers is also a significant factor in the utilization of health services, since it determines the receptiveness of personnel and therefore their acceptability by the populace. Major issues affecting worker morale appear to be: the unclear role of paraprofessional workers, poor government salaries and the lack of incentives.

For example the position of wechakorns and health volunteers within the government infrastructure is somewhat unclear and there is at present limited acceptance of them by the local population. This situation has been alleviated by the fact that workers are members of the community in which they work, but the newness of some of the paraprofessional positions has caused the community to scrutinize them more carefully. Some state that they have no problem with this; others complain that the community's trust in them is tentative and one of the causes of poor utilization of facilities.

The question of incentives presents major problems and has not yet been resolved by the Lampang project. Wechakorns were promised an increase in salary as a benefit of their training, but some claim that they have never received this. In addition, many of the VHV's who were promised free medical care at the health centers and district and provincial hospitals have been refused this. As a result, health workers have lost trust in the more central levels of administration, and though most continue to work in the same capacity as they would had these promises been met, they feel no particular obligation to follow recommendations from higher-level personnel.

At the level of the wechakorn, this is seen, in some respects, by the common occurrence of "private practices". Although rarely acknowledged openly, most wechakorns have their own clinics which they hold after government hours in their own homes. These practices are lucrative and supplement the meager government salary.

What occurs, at times though, is that the wechakorns may actually discourage use of the government facility by providing curt service while on government hours, and very personal, meticulous care when practicing privately. The ready availability of prescription drugs from local druggists facilitates this phenomenon.

The VHV's may also manifest low morale by limiting their time availability. Given the fact that they are volunteers and have full-time occupations, it is relatively easy for some to be away from their homes, which the serve as healthposts, at times when their services may be required most. The government has no leverage in determining their hours.

The consequences of this poor utilization of the health care system for the rural population are difficult to assess without further study; one may be the low population coverage mentioned earlier. The primary consequence for health workers is that much of the time that they are in the government facilities, they are idle. This situation is made worse by the fact that some of the workers prefer to remain in the sub-centers and make few attempts to seek out the villagers and possibly make better use of available time.

The implications of this lack of appropriate utilization of health care services for Thailand, assuming that it is a problem in provinces other than Lampang, are great. This is especially true at the present time, given the Thai government's current emphasis on the training of large numbers of volunteers and auxiliaries. This approach has been adopted as a major solution to the problem of health manpower shortages. But, unless strategies, such as

retraining programs, better salaries, or incentives are devised to insure higher levels of efficiency for existing health workers, as well as those in training, there will be a tremendous drain on available resources just to keep all of these inefficient workers maintained in government positions.

The ready availability of prescription drugs to the general population is also a determinant of the poor use of government health facilities, since the people know that drugs for any medical condition are available nearby at the local drug-seller. The Thai government has officially restricted the selling of prescription medications and has required the registration of all pharmacists and drug-sellers; however, there is no enforcement of this policy. The free access to pharmaceutical supplies is apparent in the rural areas of Lampang province, and many of the VHV's visited had their own stores of medicines to sell in addition to those provided from government sources for volunteers. This access has also created an attitude towards medical care that is evident at all levels of the government rural health system. That is, many of the villagers observed seem to equate quality medical care with "strong medicines", especially those that can be injected. For example, parents would often request an injection of an antibiotic rather than tablets or nothing at all, since they felt that the drug was essential, no matter what the condition. Health workers, in turn, are made to feel that their credibility is at stake if they do not give some drug to any person seeking medical care. This often results in indiscriminate dispensing of prescription drugs, especially antibiotics, although some workers have learned to deal

with these expectations by dispensing large numbers of vitamins.

Another area determining the lack of utilization of available services is the lack of integration of Western-oriented medicine into the traditional forms which have been and still are important for the rural populations. Although the presence of indigenous injectionists, not considered traditional in the narrow interpretation of the word, and traditional healers, such as herbalists, is very evident when one spends time talking with villagers and village volunteers, health personnel have little regard for them, and make little effort to include them in health-related activities. They acknowledge that these healers frequently interfere with their attempts to treat people, but they can see no reason to include them in training programs which would give them some access to Western-oriented medicine.

In addition, with the exception of traditional birth attendants, none of the traditional healers have been included in training programs of the Lampang project, and the TBA's will not be trained in any national-level plans. Given fact that traditional healers are being utilized by a portion of the rural population, keeping them at the periphery of any attempts to improve medical care for rural people makes little sense.

Community Participation

Because of the lack of education and awareness of the rural population in general, it is not surprising that there is little community participation in health or health-related activities. The

stimulation of community involvement was one of the Lampang project's objectives, and although community councils were given the role of selecting suitable candidates for village volunteer positions, they have not been active in health areas since. Their main functions at present are to plan activities related to general community development, such as irrigation systems, and road repairs. Although these activities are essential, participation in health programs is necessary if the objectives of the Lampang project are to be maintained after the project is completed. That is, a multidirectional form of health planning and cooperation is impossible without initiative and participation "from below", at the village level. Reasons suggested by health workers for this lack of sufficient community activity include fiscal restraints, and poor systems of communication and organization within and between villages.

One area where cooperation between the rural health system and communities is required is environmental sanitation. In addition to education concerning the importance of sanitation, the health sub-centers, in conjunction with the sanitarians from the district and provincial health offices, organize sanitation projects. These projects, such as the construction of latrines and covered wells, are dependent upon community resources, and only limited funding from outside sources is available. Thus, it was observed that on going activities for the improvement of village sanitation are fragmented and limited to those communities with sufficient resources, usually those least in need. The major improvement promoted by the Lampang project is the installation of PVC

hand-pumps on wells in some of the tambons of the Hang Chat district. Although of benefit to the designated tambons, its scope extremely limited.

PEDIATRIC SERVICES

Although all pediatric services are organized within the government rural health system, and are available at each facility, an examination of the services highlights the issues and problems discussed above. For example, the inappropriate ordering of priorities, which emphasizes cure rather than prevention, is particularly prominent, perhaps because child health maintenance depends so much on health education, anticipatory guidance, and periodic screening to avert problems requiring major medical care.

Health workers were observed to spend only a few minutes with both parents and child during the course of a visit, and state that they feel that parents are more receptive to brief exchanges rather than long discussions on the various ways in which health can be promoted and disease prevented. What often occurs though, is that the child is simply treated, with little or no time set aside to allow the parent or guardian to ask questions or to insure that they have obtained advice or information. The lack of any significant amount of health education is not the situation at all health service units, and occasionally the wechakorn or midwife was observed spending time advising the parents and child. These are one-on-one interactions, but despite the potential effectiveness of this form of communication, it reaches relatively few individuals.

The lack of technical and administrative supervision, medical and material supply systems, and problems in the training and retraining of workers and their subsequent use of instruction materials all operate to limit the scope and quality of pediatric care. One example of this is in the area of nutrition. Health workers claim to be engaged in a spectrum of nutrition activities. Observation reveals a very different situation, and few activities are done beyond occasional surveillance activities, sporadic supplementation, the promotion of breast feeding, and the enrollment of a very small number of pre-school children in child nutrition centers.

Analysis of the reasons for this fragmentation and abbreviation of nutrition services reveals that health personnel receive no feed-back from the administrative level about the services they are providing. Apart from initial training, there are no organized means designed to maintain an interest or level of competency in nutrition surveillance. In addition, the provision of food supplements is sporadic, at best, and creates the situation where parents can see no point in returning for follow-up visits if there are no supplements to be obtained. They return only if a specific health problem is encountered. With very little concern being generated at the technical or administrative supervisory level and communicated to peripheral health workers, it is relatively easy to understand why efforts to provide these activities have failed.

Well-child care clinics are also limited in scope, and are designed to provide immunizations, rather than comprehensive health maintenance or education. The immunizations available depend upon the length of time since the last delivery of pharmaceutical supplies and the presence of a refrigerator. One midwifery center was noted to be without refrigeration, and the midwife could administer immunizations only on the days when she found time to travel to the district hospital, several miles away, in order to obtain a small number of vaccines which had to be administered that day.

Other services such as general pediatric clinic, school health programs, and dental care vary greatly among sub-centers, and the level of activity of each of these is determined primarily by the attitudes of the health personnel and their capabilities. Wechakorns or midwives who feel, for example, that school health programs are essential will make the effort to visit schools regularly; those who don't prefer to remain at the health or midwifery centers holding general medical clinic. Since there is no accountability for the time the health workers spend at health subcenters, or out on visits to schools or homes, there is little incentive to extend services to the community besides personal motivation.

The extent and quality of curative and dental services is also determined by the technical capabilities of workers. General medical care is most remarkable for its lack of precision and consistency in diagnosis and treatment. These, in turn are

determined by the reliance upon memory with a tendency to diagnose all complaints referable to one system as being caused by one specific problem and then to treat them similarly. For example, most cases of abdominal pain are diagnosed as indigestion and treated with bicarbonate of soda, regardless of associated symptoms; most complaints of the upper respiratory tract are treated with penicillin. As mentioned, inadequate drug supplies also result in inappropriate treatment and a general laxity regarding diagnosis, as there are frequently no adequate means of treatment once a diagnosis has been made.

The allotted time spent with a sick child has a significant impact on the quality of the care provided. That is, in almost all of the health centers studied, wechakorns spend a few minutes, at the most, obtaining a history and doing the physical examination, and several more minutes deciding the diagnosis and required treatment. The midwives, in general, spend more time than wechakorns on these procedures, because they feel far less confident providing curative-medical care. However, in both instances, the results are much the same, and the entire process is notable for minimal attempts to provide any type of health education. Considering that curative care is the pediatric service most often sought by parents, it is a major oversight of health workers not to communicate information on health promotion and disease prevention during these encounters. Of note is that there are currently no emergency and trauma care services.

Geographic coverage of the pediatric population is determined by the number and distribution of health facilities and the Lampang Project has made significant progress in expanding the rural health infrastructure. In contrast to this is population coverage, determined more by the nature and utilization of available services. For example, child nutrition centers are the only day-care facilities available to children on a regular basis, and they are accessible to a limited number of children whose parents can afford to pay. Most are over-crowded, and cannot provide care to more than 5% of the pre-school population, leaving a significant sector of pre-school children without benefit of these services.

MATERNAL SERVICES

Health services for women of child-bearing age appear to be much better represented than pediatrics services, although the quality and scope are affected as well by limitations in utilization patterns, material support systems, and attitudes of both health workers and women seeking medical care.

Utilization of available services seems to be the major obstacle preventing adequate provision of maternal care. In the rural areas especially, the traditional birth attendant has held a major role, and she is still an essential resource for a significant number of women. This is particularly true when deliveries occur at night or during the weekends, when the government-employed midwives are not available. Over the past few years, midwives have noted a gradual increase in the numbers requesting ante-natal and delivery care and family planning services. It is felt that this increased

demand is the result of major national efforts to expand the general use of contraceptives. More women are also choosing to deliver at the district and provincial hospitals; this is felt by health workers to be a reflection of better awareness of available options.

The ante-natal, delivery, and family planning services provided at health subcenters are comprehensive and regularly available to women requiring them. Midwives, in turn, have established active systems of referral between their sub-centers and the more central hospitals for any obstetrical and gynecological complications. One reason for this comprehensive nature of maternal services may be that midwives were providing these before implementation of the Lampang Project; midwives state that they are currently well received by the female population. Another possibility is that maternal services can be delivered for the most part at the health sub-center. With the exception of occasional group meetings to discuss family planning, midwives see no reason the initiate village located activities that are related to maternal health, unlike many of the pediatric services. The only services which are performed outside the health or midwifery center are home visits, also the only means of delivering post-natal care. The extent of this activity and the schedules followed vary tremendously among different facilities and reflect in part the time availability of workers, as well as individual personnel preferences and priorities.

Difficulties with material support and training programs do not seem to have such visible consequences for maternal as pediatric services. Subcenters are fairly well stocked with all forms of

contraceptives, tetanus toxoid vaccines, nutritional supplements, such as ferrous sulfate and vitamins, supplies required for ante-natal clinics, such as the hemoglobin measurement kits, and equipment necessary for labor and delivery. Occasionally, shortages of vitamins and ferrous sulfate necessitate giving supplements to only those women who are thin or anemic, rather than all who are pregnant or lactating. Health education is also extremely limited and consists of basic advice on the importance of proper diet and the value of breast-feeding.

X. CONCLUDING REMARKS

The fact that there are significant gaps between planning at the central level and implementation of programs at the periphery comes as no surprise to those who are involved in the planning and execution of health care delivery systems. What is perhaps more striking is that there are factors contributing to this gap at each step along the way, from the central to the village level.

The Ministry of Public Health in Thailand has identified quite correctly the population groups most in need of medical care, such as women and children, and the public health problems most deserving of attention. On paper, many plans addressing these have been produced. Thus, it appears at first sight, that the Thai government has made a significant commitment to improving the health status of certain segments of the population demonstrating particular need. It has made the expansion of rural health facilities the prime objective of the current national plan and has already begun replication of several aspects of the Lampang Health Development Project throughout the nation. On closer examination, it is clear that this commitment is in many respects a relatively hollow one, with inadequate budgeting for specific programs, and a tendency to rush the process of replication without access to final evaluation data, which has been the case with the replication of some aspects of the Lampang Project. The result seems to be little more than a gesture removing the sense of urgency from problems demanding solution and mollifying those individuals calling for a change in the status quo. Unfortunately gestures have no real benefit for the

population of Thailand.

There are also significant problems at the periphery which contribute to the gap between theory and implementation; data collected from this study show that there are a multitude of factors at the provincial, district, and local levels which preclude effective application of health development plans. These factors discussed at length in the previous section emphasize the importance of several principles necessary for implementation. Of major importance is the promotion of strong local management through decentralization and training this is essential for the execution of plans through peripheral governmental levels. Adequate resources for the rural health system are also necessary, but more important is their rational use. Community participation links all of these efforts, since it is only through local initiative that plans proposed "from above" will be initially accepted and then put into actual practice. This community self-reliance forms the basis of the concept of primary health care.

The need for local initiative is one of main obstacles facing the implementation of pilot, or demonstration, projects. These projects are usually created by individuals outside of the intervention area and rely to a large extent on foreign aid and individuals who provide technical assistance. The present study was done through one such program, the Lampang Health Development Project, which allowed for the observation of the specific implementation of a pilot project in addition to some of the more widely practiced aspects of the Thai rural health delivery system.

In principle, the Lampang Health Development Project is one of the most comprehensive of the demonstration projects currently in operation in Thailand. It has identified the significant problems of the province and has devised strategies integrating all levels of the provincial administration as well as the community. Like most pilot projects, it has been implemented rapidly, and has created its own management system which is responsive to its needs and free to some extent from constraints of the existing bureaucratic structure. However, it has been unable to implement fully the objectives originally outlined, such as providing adequate health services for mothers and children, for the reasons previously described.

Using more pragmatic considerations, although the Lampang Project can test concepts and innovations, it cannot test national support systems and the coordination within the health infrastructure required for successful replication. This is a result of the fact that it is by in many ways separate from the present system. In addition, the existence of the project does not insure sufficient commitment from the Thai government. Thus, the project was not able to test this or the extent of the government's understanding of the principles of health development put forth by the project. This is true even though specific aspects of the the Lampang project are in the process of replication, since the government has reserved the privilege of selective implementation. Unfortunately, in this case, fragments of the original plan are being replicated.

T is is not to say that pilot projects attempting to construct a workable system of health care are entirely without effectiveness and replicability. Demonstration projects have introduced and developed many of the strategies used in the various health delivery systems throughout the world today. However, the process of implementation tends to be expensive and time-consuming, with significant benefits going to those at the management level, rather than those who execute the elements of the project. In addition, problems securing meaningful participation of the rural communities, providing steady technical support and encouragement, and maintaining the socio-economic and cultural milieu in mind are ever-present and reduce the impact of any intervention.

In the end, it is clear that a nation is capable of developing only the health care system which it can afford, and that the success of this system is dependent upon the ability of the population to utilize it appropriately. This ability, as reflected in the attitudes and awareness of health providers and seekers alike, is determined by the level of education, a function of the socio-economic status of the population. Socio-economic development insures the availability of local resources necessary to finance health schemes, encourages community involvement, and strengthens management capacity required for local implementation of programs. Any attempts to provide health care services to a population without providing the means to improve the level of socio-economic status are doomed to fail.

FOOTNOTES

[1] One baht=US $.05

[2] 1980 estimates of life expectancy in the United States: 69.4 for males, 77.3 for females (16).

[3] The 1980 IMR figure in the US is 14.1/1,000 live births (16).

[4] Refers historically to the custom of lying near the household fire for a one-to-two month period with the newborn and adhering to severe dietary restrictions (25).

[5] Using 50th percentile of the Harvard standard as expected weight-for-age, first-degree malnutrition is 75-90% below this, second-degree, 60-75%, and third-degree below 60% (28).

[6] Smallpox vaccinations no longer recommended by MOPH

[7] BCG-Bacille de Calmette-Guerin used in the prevention of tuberculosis.

[8] The concept of village volunteer is not new; in the 1960's rural health services began experimenting on a limited basis with both VHV's and VHC's, in the Saraphi district of Chiang Mai and in the Phitsanulok district (35).

9 Health service units include DH, HC's and MC's; health subcenters include HC's and MC's.

10 The following recommendations are given in the wechakorn training module on the treatment of diarrhea:

1.) Bacillary dysentery (Shigella, Salmonella)--tetracycline or chloramphenicol or sulfaguanidine and kaolin.

2.) Amebic dysentery--iodoquine or emetine or dihydroemetine.

3.) Cholera--intravenous rehydration, tetracycline, and referral.

No mention is made of treatment for cure of Escherichia coli, viral, or non-infectious diarrhea.

Appendices

Appendix 1

Statistics of Prevalent Diseases in Thailand (1)

	Morbidity	Mortality
Water and food borne diseases	26,600/100,000	118/100,000
Vector borne diseases		
Malaria	640/100,000	9/100,000
Dengue hemorrhagic fever	64/100,000	7/100,000
Intestinal parasitic diseases	61,900/100,000	
Nutritional deficiencies		
Malnutrition in preschool children	52-76%	
Anemia	40%	
Respiratory tract infection	92,700/100,000	265/100,000
Tuberculosis	79/100,000	
Skin diseases	4,287/100,000	
Accidents - Home		8.08/100,000
- Traffic		10.5/100,000
- Industrial	100/100,000	
- Agricultural		9.66/100,000
Venereal disease	382/100,000	
Psychiatric problems		
Psychotic	9/1,000	
Psychiatric	25%	
Drug addicts	500,000	

Appendix 2

Survey Outline for Health Service Units

A. Staff/General

Who are staff members and what do individual members do?
Where did they learn to do what they do?
What is weekly schedule of activities?
    Is this a set schedule?
Do mobile teams from District or Provincial Hospitals visit facility?
    What do they do?

B. Well-Child Care

What is being done? - weights,
measurements,
examinations,
laboratory tests,
routine immunizations.
Who is doing it?
Is there continuity of care?
How much time is allotted for each child, or each service?
How much time is given to: answering parents' question?
counselling?
prevention work in well-child care setting?
What is extent of follow-up?
How often is it recommended that children be seen?
If services done by auxiliary personnel, what is immediate supervision?
What is the system of record-keeping?
    Are there immunization cards that parents keep?
Do parents seem to be pleased with the service?
What are the supplies, immunizations that are available?
What is the availability of material aids, such as posters, films?

C. Nutrition

What services are available specifically for nutrition?
Is breast-feeding promoted?
What is the education or feeding habits?
What is extent of nutritional surveillance?
Supplementation - What is it?
Who provides it?
Who receives it?
Is it available on regular basis?
Are there any Child Nutrition Centers in geographic area?
    What is being taught?
    Who is teaching children?
    Numbers of children?
    Nutrition activities available?

D. Immunizations

What are routinely given?

When are they given?
To whom?
Are there any problems with parental compliance?
What is cost to patient?

E. Health Education

Is care of the child taught?
Are parents taught about normal development milestones?
Is the care of minor medical emergencies, injuries, trauma, such as snakebite, poisonings, taught to parents and children?
Is there any education about these?
Is there instruction on general hygiene?

F. Dental Services

Are they available?
Which services are routinely provided?

G. General Pediatric Clinic

Out-patient
What is done routinely for common illness?
What is follow-up?
Who provides medical care?
When child is ill, are there any steps taken at that time to promote disease prevention?
When are referrals made? For what conditions?
What drugs are available?
Which ones are given for which specific illnesses?

In-patient
Who is providing care?
What is supervision?
What is the extent of diagnostic work-up?
What treatment modalities are available?
What are diseases seen in routine admissions?

H. Ante-natal/Delivery/Post-Natal Care

Ante-Natal
What services are provided for ante-natal care?
When are women seen? How often?
What is done during routine visit?
What laboratory tests are routinely done?
Do women receive health education? About what?
Are nutritional supplements/vitamins provided?
For whom?
When are women referred to hospitals because of complications?
What is approximate number of pregnant women seeking ante-natal care at government facility?

Delivery
Where do women deliver?

Who attends deliveries?
What is done at time of delivery? for mother?
for newborn?

Post-Natal

What is extent of post-natal care?
for mother?
for newborn?
Where does it occur?
What is schedule of home visits?

I. Family Planning

What family planning services are available?
Who has access to them?
What are approximate numbers requesting: oral contraceptive pills?
condoms?
intrauterine devices?
Where do people go for tubal ligations/vasectomies?
What is screening procedure for women desiring oral contraceptives?
Who supplies oral contraceptives?
What is follow-up for women taking oral contraceptives?

J. Environmental Sanitation/Community Development

Is there anything taught specifically about water supply safety, sanitary waste and garbage disposal, vector control?
Are there any programs to improve sanitation levels?
Who renders such services?
What is availability of materials to aid in education?
What is extent of community participation in health activities?
Is there a community council?
What does it do? Who are the members?

K. Interaction with Volunteers

What is wechakorn - volunteer relationship?
What does the weehakorn do to assist them?
How often are the volunteers visited?
What is done at that time?
What are ways that the volunteers can take more responsibility?

L. Open-Ended Questions

Are there any services which you would like to provide or which the villages would like you to provide for which you feel you are inadequately trained?
What seem to be the most demand services?
What do you feel are the most significant medical problems of the children in your community?
What seem to be the main causes of malnutrition?
How do you think the community can best help to improve the health status of children?
Is there anything that would facilitate your doing this, such as training, supplies, supervision?

What customs or superstitions affect the health care you provide?
Do the villages prefer traditional medicine?
Under which circumstances do they prefer it, if they do?

How do you feel about your position as health provider?
What do you see as your major role?
How does the community view you?
What do you think of your training?
How would you like to see it improved?
What are the advantages of your job? disadvantages?
Do you receive adequate technical supervision?
administrative supervision?
How do you think your support systems, material and supervisory, can be improved?
Do you think your services are adequately utilized?
If not, what are the reasons?

Appendix 3

Survey Outline for Village Healthpost Volunteers

General

Occupation of volunteer
Number of families and children under care
Supervision

Activities

What is the approximate number of people, children seen in previous four-week period?
What services did they demand? Require?
What illnesses did they present with?
What did you do for them?
If illness, did you prescribe a drug?
What did you give? Why?

Did you perform some type of service?
If so, what and why?
If not, why not?

Did you refer them to someone else? Who?
Why did you refer them?

Did you give any advice to villages?
Was it advice on medical care or suggestions concerning health promotion, or disease prevention?

What types of services have you provided recently that you initiated yourself?
Did you advise any families about: immunizations?
well-child care?
the prevention of any specific diseases?
environmental sanitation?
general hygiene?
family planning?
maternal health?

Are you encouraging the construction of day-care centers?

Have you had any contact with community leaders such as chief monks, tambon headmen, village headmen, teachers?
What type of contact was it? Did you discuss health issues?

Have you had any contact with staff from the health centers, midwifery centers, or district hospital?
What was the nature of the contact?

Was there any service which you were asked to provide that you could not do?

What do you do instead?

Open-ended Questions

see Appendix 2

Appendix 4

Infant Feeding Recommendations

Breast feeding until 1 year of age, at which time weaning to begin.

Three Months: Additions of crushed rice and bananas, vegetable broth.

Five-Six Months: Introduction of proteins (fish, pork, chicken), with vegetables and rice—to give one balanced meal a day.

Fruit supplements.

Seven-Nine Months: Addition of protein, vegetable, rice, and fruit to give two balanced meals daily.

Ten-Twelve Months: Addition of protein, vegetable, rice, and fruit to give three balanced meals daily.

If necessary for mother to work outside of home, it is suggested that substitutions of powdered skim milk for breast milk be made, while continuing to breast feed whenever the mother is at home.

Source: Lampang Provincial Hospital, Community Medicine Department, Division of Nutrition and Health Education.

Appendix 5

Drugs Routinely Stocked at Health Service Units

Analgesics/Antipyretics

Acetaminophen
Aspirin
Baralgan
Chlorobutanol liquid
Sulpyrin

Antibiotics/Antiparasitic

Benzylpenicillin
Chloramphenicol (syrup, ampules, tablets)
Dapsone
Diaphenylsulfone
Diiodohydroxyquine
Diiodohydroxyquinoline
Emetine
Enterazole
Gentian violet
Isoniazid
Nitrofurazone
Oxytetracycline (ampules)
Penicillin V
Procaine penicillin
Scabicide emulsion - benzyl benzoate/benzocaine
Sulfacetamide
Sulfadiazine
Sulfaguanidine
Streptomycin
Tetracycline (ointment, syrup, tablets)
Trimethoprim - sulfamethoxazole

Vaccines

BCG - (Bacille de Calmetta Guerin)
Cholera
Diptheria - Pertussis - Tetatus
Rabies
Tetatus toxoid
Typhoid

Antiseptics (Topical)

Acriflavine
Cetrimide
Chlorhexidine
Mandl's paint (iodine)
Thimerosol tincture

General

Aluminum hydroxide
Aminophylline
Ammonia spirits
Atropine
Bismuth and camphor mixture
Calcium gluconate
Carminative (anti-flatulence)
Chlorpheniramine (antihistamine)
Decolgen - decongestant liquid
Ferrous sulfate
Hexamine - (urinary antiseptic)
Kaolin and belladonna alkaloid mixture
Meprobamate
Nikethamide
Opium tincture
Oral contraception pills
Oral rehydration solution (packets)
Oxytocin (ampules)
Prenisolone
Quinine (ampules, capsules)
Reserpine
Valium
Vitamins (A, B complex, B_{12}, C, D)
ampules and tablets.

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